GELFAND OUTREACH

Rigorous - Educational - STEM Focused - Hands-on - Fun

Summer 2025 Series Classes - Carnegie Mellon University

Scholarship funds are available through gifts from several Carnegie Mellon alumni. Please see the information below to learn more.

Program Overview

The Gelfand Outreach Summer Series is designed to illuminate, encourage, and motivate our future scholars through week-long classes in science, technology, engineering, math, and arts. We value hands-on learning, creating, collaborating, and sharing ideas. We understand the importance of providing opportunities for our young learners in Pittsburgh and southwestern Pennsylvania. Our Summer Series enables local students to explore science, engage in experiments using the scientific method, build prototypes, and so much more.

Instructors

We partner with members of the Carnegie Mellon University community to present these exciting summer courses for kindergartners through ninth grade students. CMU faculty and staff design our Gelfand Outreach classes to spark learning and enthusiasm in the fields of science, technology, engineering, math, and arts. We introduce young learners to their cutting-edge discoveries in research at CMU. Gelfand Outreach teachers are scientists and educators who understand the significance of early STEM education for our youth. For more information about each instructor see the brief biography following the course description.

Application Process

Classes are open to students entering kindergarten through ninth grade. Parents register online and students are assigned to classes in the order in which we receive the registrations. Students may take one or more classes.

Location and Time

Classes take place on Carnegie Mellon University's campus in the Oakland neighborhood in Pittsburgh, PA. The classes will meet Monday through Friday from 9 am - Noon daily.

Cost

Classes are $350. All fees must be prepaid. Payment is expected when a child is accepted to guarantee their spot in class.

Financial Aid

Financial Aid Scholarships are available. To qualify you must submit a copy of the first page of your IRS Tax Form 1040 from the past year. We are able to offer scholarships through a gift provided by Carnegie Mellon alumnus Bernard Meisner (S '71) and other donors to support students in Gelfand Outreach classes.

Rigorous **Educational** **Hands-on**

5000 Forbes Avenue, Cyert Hall A64, Pittsburgh, PA 15213 - 412-268-1863

http://www.cmu.edu/gelfand - GelfandCenter@andrew.cmu.edu

CHEMISTRY IN THE SUMMER GRADES 3-5

June 23rd - 27th

Students will experience how chemistry applies to everyday life through participation in hands-on activities and demonstrations. They will learn fundamental chemistry concepts such as the three states of matter, chemical bonding, and much more! They will explore various fields of chemistry including Environmental, Forensic, non-Newtonian liquids and Kitchen Chemistry. In this hands-on class students will be working in a lab and participating in lecture demonstrations to explore the amazing world of chemistry. Safety is essential! We will teach them how to work in a safe environment while having fun. To ensure all safety measures are met we ask that all students must wear close-toed shoes and long pants to the class. We will be working in a CMU chemistry lab and will provide lab aprons and safety goggles/face shields for additional safety precautions.

Dr. Gizelle Sherwood

Dr. Gizelle A. Sherwood is currently an Associate Teaching Professor at Carnegie Mellon University. She earned her Ph.D. in 2008 where her research focused on the effects of aggregation on the photophysics of oligomers related to MEH-PPV and CN-PPV. She primarily lectures Modern Chemistry, the sophomore year Analytical Chemistry labs as well as a Cosmetic Chemistry course. She is passionate about engaging students in discussion of the application of Chemistry to everyday life and has been involved in several outreach programs working with both the Boy Scouts of America and the Leonard Gelfand Center.

Bella Ballin

Bella Ballin is currently a Lab Instructor in the Department of Chemistry at Carnegie Mellon University. After graduating with her BS in Chemistry in 2020, she joined the undergraduate teaching labs where she works with professors to teach students laboratory skills in General, Analytical and Organic Chemistry. She is passionate about supporting students while they learn hands-on techniques and has been involved in several outreach programs including Science Olympiad and Leonard Gelfand Center activities. She also enjoys bringing chemistry to life at home with her daughter.

Dr. Derin Sevenler

Dr. Derin Sevenler joined the Carnegie Mellon University Department of Chemical Engineering as an assistant professor in 2024. His research addresses problems at the interface of biotechnology and fluid mechanics. His interests include microfluidics, non-Newtonian and complex fluids, biomaterials, gene & drug delivery, nano-optics, and molecular diagnostics. Sevenler received his Ph.D. in biomedical engineering from Boston University and his BS in mechanical and aerospace engineering from Cornell University. From 2018 to 2022, he was a postdoctoral fellow in the laboratory of Mehmet Toner at Massachusetts General Hospital. Before joining Carnegie Mellon University, he was an instructor in the Center for Engineering in Medicine & Surgery at Massachusetts General Hospital and Harvard Medical School. Sevenler is a recipient of the NIH Pathway to Independence Award.

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Krista Aylwin

FORM AND FUNCTION GRADES K-2

July 14th - 18th

Discover how things are made and how they function! We will discuss both man-made materials and objects in nature. We will talk about the design process, build as engineers, test our builds, and revise our ideas. Students will keep a journal of ideas and designs just like real engineers. Each day there will be different STEM building challenges from building a marble maze, boat, bridge and much more! Sign up if you like to build!

Krista Aylwin is originally from California, and she earned her BA in Child Development from California State University, Chico. After graduating, Krista moved to Pittsburgh and became the Lead Teacher in the Twos Classroom at Eastminster Childcare Center and at Carriage House Children's Center. She also taught English in Southeast Asia at the National University of Laos in Vientiane, Lao PDR. She is a preschool fours teacher classroom at Carnegie Mellon University, Children's School. Krista enjoys planning future travels, touring historical homes, creating embroidery projects, baking a new recipe and trying to keep her house plants alive. She currently volunteers with the organization Prism working with internationals as an English Partner. On the weekends, you can catch Krista hanging out with friends, exploring the wonderful parks of Pittsburgh or enjoying time at home with a good book.

Christa Romanosky

JUNK BOTS GRADES K-2

June 23rd - 27th

What are robots and what makes robots work? Can robots really take over the world? In this class, we'll build different types of robots and learn about batteries, LED, circuits, electricity, and more. We'll explore how engineers build machines and make modifications to our robots to really make them buzz, rattle, and move! Draw and design your own junkbot, bringing it to life with household items! Have fun with science and technology while learning to think like a robotics engineer. The sky's the limit!

Christa Romanosky has been teaching STEM classes through Gelfand Outreach and other programs since 2014 and has been an educator in the arts for over fifteen years. She has had previous fellowships with the Provincetown Fine Arts Work Center and James Merrill House, with much of her writing integrating science and health-related topics. She currently works for the Office of Epidemiology, with a focus on respiratory disease data & analysis. Romanosky holds an MFA from the University of Virginia, and bachelor's degrees in psychology and creative writing from Carnegie Mellon University.

Megan McDonnell

NEUROSCIENCE 101 GRADES 6-8

June 23rd - 27th

The brain oversees all our perception, thoughts, and actions. It is how we interact with the world around us every day! In this class, we will learn how the brain can understand the world around us through the sense of sight, as well as how the brain interacts with the world using our muscles and body. Finally, we will learn about what happens when something goes wrong in the brain, and how we can use prosthetics and brain-computer interfaces to help restore lost functions of the brain or body.

Julia Ostrowski

Ani Gribbin

Megan, Julia, Ani, Emily Tomas, and Emma are all Ph.D. students in systems or computational neuroscience at Carnegie Mellon. As scientists, they perform research in many labs that study vision, hearing, engineering, brain-computer interfaces, and rehabilitation. One of their shared passions is bringing accessible science to kids, and to inspire more young minds to join STEM fields like neuroscience.

Emma Gao

Emily Lopez

Tomas Suarez Omedas

RESEARCH @ CMU GRADES 6-8

July 14th - 18th

Students will be introduced to faculty members and graduate students who conduct cutting-edge science, computer science, and engineering research at Carnegie Mellon. Through discussions, tours, and hands-on activities participants will learn about studies that are designed to solve societal problems, application of science and mathematics content that they are learning in school, and about pathways to careers in STEM fields.

Dr. Marc Dandin

Dr. Marc Dandin is an Assistant Professor in the Department of Electrical and Computer Engineering at Carnegie Mellon University as of July 2019. He previously co-founded and led a start-up company in the medical diagnostics arena. Furthermore, he worked as a technical specialist in intellectual property matters at several law firms in the Washington, D.C., metropolitan area. For his research and entrepreneurship efforts, Dr. Dandin was awarded the University of Maryland Bioengineering department's Robert E. Fischell Fellowship in Biomedical Engineering, the Electrical Engineering department's inaugural Jimmy H. C. Lin Award for Entrepreneurship, and the Mechanical Engineering department's Certificate of Excellence. In 2017, he was elevated to the grade of Senior Member of the IEEE in recognition of his professional standing.

Dr. Ioannis Gkioulekas

Dr. Ioannis Gkioulekas is an assistant professor at the Robotics Institute of Carnegie Mellon University, where he has been since 2017. Before that, he was a Ph.D. student at Harvard University, and even before that an undergrad student at the National Technical University of Athens, Greece. He works on computational imaging, which can be broadly described as coming up with systems that combine imaging (optics, sensors, illumination) and computation (physics-based modeling and rendering, inverse algorithms, learning) in innovative, unexpected, and meaningful ways. Particular problems he is interested in, include imaging around walls or through skin, material acquisition, differentiable rendering, and the integration of physics-based simulation, learning, and optics. He is also more broadly interested in computer vision and computer graphics. For his work he has received the Best Paper Award at CVPR 2019, a Sloan Research Fellowship, and an NSF CAREER Award.

Dr. Amanda Krause

Dr. Amanda Krause is an assistant professor in the Materials Science and Engineering Department at Carnegie Mellon University. Before joining CMU, she was an assistant professor of MSE at the University of Florida from 2019 to 2022. She received her B.S. and M.S. in Materials Science and Engineering from Virginia Tech, and her Ph.D. in Materials Science from Brown University. Her research focus is engineering ceramic interfaces and microstructures for improving properties.

Dr. David Lindlbauer

Dr. David Lindlbauer is an Assistant Professor at the Human-Computer Interaction Institute at Carnegie Mellon University, where he leads the Augmented Perception Lab and co-directs the CMU Extended Reality Technology Center. His research focuses on understanding how humans perceive and interact with digital information, and to build technology that goes beyond the flat displays of PCs and smartphones to advance our capabilities when interacting with the digital world. To achieve this, he creates and studies enabling technologies and computational approaches that control when, where and how virtual content is displayed to increase the usability of Augmented Reality and Virtual Reality interfaces. Prof. Lindlbauer holds a Ph.D. from TU Berlin and was postdoctoral researcher at ETH Zurich before joining CMU. He has published more than 35 scientific papers at premier venues in Human-Computer Interaction such as ACM CHI and ACM UIST. His work has attracted media attention in outlets such as MIT Technology Review, Fast Company Design, and Shiropen Japan.

Dr. Axel Moore

Dr. Axel Moore is an Assistant Professor of Biomedical Engineering at Carnegie Mellon University. He earned his Ph.D. from the University of Delaware, where he discovered and established a new theory of fluid recovery in articular cartilage. Following this he joined Imperial College London as a postdoctoral fellow to develop biomaterials capable of mimicking the normal functions of bone and cartilage. Finally, prior to joining CMU, he was a Biomedical Research Scientist at the University of Delaware where he developed a pre-clinical large animal model of scoliosis. Dr. Moore's current research applies acute and chronic in vivo loading to both quantify and modulate the function of orthopedic tissues with a special interest in articular cartilage and the spine.

SCIENCE AND ENGINEERING SAMPLER GRADES 3-5

July 7th - 11th

Students will visit a variety of labs and spaces at Carnegie Mellon to learn about cutting edge research. Faculty, graduate students and staff in science, engineering and computer science will share information, demonstrations and hands-on activities to help Sampler participants develop a broader understanding of what it means to work as a scientist or engineer. Students will summarize the information that they have learned and make connections between the research activities and the content they are learning in school.

Dr. Joanne Beckwith Maddock

Dr. Joanne Beckwith Maddock is an assistant teaching professor in the Department of Chemical Engineering at Carnegie Mellon University. She earned her Ph.D. from the University of Michigan where she studied bacterial and fungal biofilms which are a common cause of medical device infections. She also worked as a manufacturing engineer at a company that makes paint pigment. Currently, she teaches Intro to Chemical Engineering, and the Chemical Engineering Lab courses. She is passionate about helping students understand the impact that chemical engineering has on their everyday lives and the wide range of job opportunities a degree in chemical engineering offers. When she is not teaching, you can find her going for a run or rock climbing.

Dr. Sneha Narra

Dr. Sneha Narra received a Master of Science in computational mechanics, and a Master of Science and doctorate in mechanical engineering from Carnegie Mellon University (CMU). She worked as a postdoctoral research associate at the Next Manufacturing Center at CMU. She was an assistant professor in the materials and manufacturing program at Worcester Polytechnic Institute, before joining CMU as an assistant professor in 2021. As an instructor, Narra's goal is to help her students learn effectively in a comfortable environment and spark interest in them to explore outside the classroom. To meet this goal, she adopts a teaching philosophy that builds on creating an inclusive learning environment, active participation from students, learning through real-world examples and demos, and assessment techniques optimized for long-term retention and exploration. Narra is passionate about mentoring women in engineering and she participates in outreach activities, educates students about professional development opportunities, and provides opportunities to conduct research in interdisciplinary topics.

Alexandria Stinchfield

Alexandria Stinchfield is a Ph.D. student in chemical engineering working on atmospheric chemistry and physics targeting climate change solutions. She is from Scituate, Rhode Island and completed her bachelor's degree at Villanova University majoring in biology and double minoring in astrophysics and humanities. Ali's undergraduate work focused on astrobiology, working at SETI (Search for Extraterrestrial Intelligence) and NASA performing organic chemistry research to look for alien life. During her undergraduate time, she was on the board of the environmental club, sustainability club, TEDxVillanova, and the astronomical society. Outside of work, Ali enjoys hiking, camping, playing piano, reading, and roller skating.

Dr. Ryan Sullivan

Dr. Ryan Sullivan is a professor in the Departments of Chemistry and Mechanical Engineering at Carnegie Mellon University. He is also a faculty member in the Center for Atmospheric Particle Studies. Sullivan has a background in atmospheric and analytical chemistry, single-particle analysis, heterogeneous kinetics, and cloud nucleation research. His research interests include the development of improved aircraft-deployable analytical instrumentation to characterize individual particles in the atmosphere in real-time. These instruments are used to investigate the physicochemical properties of atmospheric particles emitted and produced from a variety of sources, the chemical processes they experience during atmospheric transport, and how these processes modify the ability of particles to nucleate both cloud droplets and ice crystals, thus altering cloud properties and the Earth's climate. These research endeavors involve equal parts instrument development, laboratory experiments, and field measurements.

Craig Weeks

Craig Weeks İs a Ph.D. student in mechanical engineering working on computational fluid dynamics modeling of metal additive manufacturing processes. He is from Portland, Oregon and completed his undergraduate studies at Oregon State University, where he majored in mechanical engineering with a double minor in aerospace engineering and computer science. Craig was part of the hybrid and liquid-engine rocket teams at Oregon State, and interned at the NASA Glenn Research Center in Cleveland, OH working on electric aviation. In his free time, Craig enjoys trail running, playing piano and guitar, and discovering hikes in and around Pittsburgh.

GELFAND OUTREACH

Summer 2025 Series Classes

Classes are $350.00 each, all classes are conducted from 9:00 AM to noon at Carnegie Mellon University.

Class Name	Dates	Grades	Brief Description
Junk-Bots	June 23 - 27	K - 2	What are robots and what makes robots work? Explore how engineers build machines and make modifications to robots. Draw and design your own junkbot, bringing it to life with household items!
Chemistry in the Summer	June 23 - 27	3 - 5	Learn fundamental chemistry concepts such as the three states of matter, chemical bonding, and much more! Explore various fields of chemistry such as Cosmetic, Environmental, Polymer, Forensic and Kitchen Chemistry.
Neuroscience 101	June 23 - 27	6 - 8	The brain oversees all our perception, thoughts, and actions. It is how we interact with the world around us every day! In this class, we will learn how the brain can understand the world around us.
Science & Engineering Sampler	July 7 - 11	3 - 5	Visit labs and areas at CMU to learn about cutting edge research! Faculty, graduate students and staff in science, engineering and computer science will share information, demonstrations and hands-on activities.
Form and Function	July 14 - 18	K - 2	Discover how things are made and how they function! Learn about the design process, build as engineers, test your builds, and revise your ideas.
Research @ CMU	July 14 - 18	6 - 8	Students will be introduced to faculty members and graduate students who conduct research at Carnegie Mellon. Discuss, tour, and participate in hands-on activities.

To apply for scholarship funds, please submit a copy of the first page of your IRS 1040 tax form from last year.

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