



K–12 STEM Education and Outreach

Science, technology, engineering, and mathematics (STEM) outreach is vital to the nation's development of future scientists, engineers, and innovators. As the Department of Energy's largest multiprogram science and energy laboratory, Oak Ridge National Laboratory is committed to serving the public as a valued partner in educational initiatives, promoting and expanding STEM experiences for the next generation. ORNL offers students, educators, and community members a variety of learning opportunities that correspond to the Laboratory's distinct areas of scientific research. Educational outreach efforts are aligned to engage children today with the workforce needs of tomorrow.

Internship and Research Experiences

Educational experiences at ORNL offer participants the opportunity to learn from world-class scientists while using the laboratory's unique resources and encourage the pursuit of careers in STEM and supporting fields. In cooperation, ORNL and the Oak Ridge Institute for Science and Education offer numerous internship and research opportunities to high school students including the following.

- Appalachian Regional Commission (ARC)/ORNL Summer Math Science Technology Institute— Provides short-term, hands-on research experience for small groups of high school students and STEM teachers from the Appalachian Region. The program highlights the critical value of ORNL and its science resources
- Higher Education Research Experiences (HERE)—Offers opportunities for participation in research and related technical activities to qualified entering college freshmen
- High School Research Experience (HSRE)—Offers internship opportunities in math, science, digital arts, business, and information technology
- Next Generation STEM Internship Program (NEXTGENS)—Affords rising high school juniors and seniors from surrounding counties the opportunity to participate in STEM projects with researchers at ORNL

School and Community Events

ORNL proudly partners with many schools and community groups in the surrounding area in a variety of events including school STEM nights, science fairs, career fairs, teacher professional development, and other educational events. Through hands-on activities and demonstrations, students and community members can gain an understanding of the concepts that fuel scientific research. Employee volunteers visit regional schools for events such as Hour of Code, National Engineers Week, Environmental Science Week, Nuclear Science Week, and Computer Science Education Week. In 2019, employee volunteers helped with Computer Science Education Week activities in elementary, middle, and high schools in 10 Tennessee districts.

ORNL staff engage with students to promote awareness of STEM-related career opportunities.



Student Tours

ORNL welcomes middle and high school student groups for a unique field trip experience. At the laboratory, the scientific concepts students learn about in the classroom are applied every day to solve the 21st century's scientific challenges. Students tour some of ORNL's historic, scientific, and engineering facilities, discover the innovative research that occurs onsite, and meet STEM professionals. In 2019, 2,244 students from 17 Tennessee counties and 3 states participated in group tours.



Traveling Science Fair

ORNL's Traveling Science Fair provides guests of all ages the opportunity to learn more about science and the importance of research conducted at ORNL. Students enter carnival-style, interactive trailers that describe various field of research and areas of future job opportunities. *Become a Neutron, Extreme Science, Get into Green, Tiny Atoms... Big Science, What's Your Problem, and Mission Support* trailers provide participants with hands-on, interactive experiences centered around ORNL's diverse areas of research. In 2018, over 387,000 people visited the trailers in Oak Ridge and its surrounding areas, as well as Washington, DC.

Programs Supported by ORNL

- **FIRST (For Inspiration and Recognition of Science & Technology) Lego League:** FIRST Lego League is a mentor-based research and robotics program designed to help 9 to 14 year old students become science and technology leaders, as well as well-rounded contributors to society. ORNL provides \$5,000 annually toward FIRST Lego League of East Tennessee events.
- **FIRST Robotics:** FIRST Robotics is an international program that brings together teams of high school students to build robots for an international competition. Since 2013, UT-Battelle has provided more than \$225,000 in funding to area teams from 19 high schools and funded regional tournaments. In 2019, UT-Battelle provided \$33,000 in funding and several ORNL staff members volunteered to mentor teams and judge the regional tournament.
- **Science Bowl:** The DOE's National Science Bowl is a nationwide academic competition that tests students' knowledge in all areas of science and mathematics. UT-Battelle proudly sponsors regional competitions.
- **STEM Scouts:** STEM Scouts, a coed program of the Boy Scouts of America, is a national after-school STEM education program developed by former ORNL employees and piloted in East Tennessee by the Great Smoky Mountain Council of the Boy Scouts. UT-Battelle has been a major sponsor of STEM Scouts in the Knoxville area since its beginning in 2014. At the end of 2019, the organization was the Charter Organization for over 30 STEM labs.

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