ORAU Center for Science Education
2025 Summer Professional Development Workshops
To register, visit https://orausurvey.orau.org/n/TeacherPD2025.aspx

All times are listed in Eastern Daylight Time

In-person sessions will take place at ORAU in Oak Ridge, TN. **Virtual** sessions will take place via Zoom. **Hybrid** sessions will take place at ORAU in Oak Ridge, TN and via Zoom.

Hands-On Math with Desmos (Virtual Session)
Monday, June 2
1:00 pm – 4:00 pm
K-12 Teachers
Maria Rhodes, High School Math Teacher, Chattanooga Christian School

The Desmos activity builder is a fantastic online tool for teachers to create formative assessments and exploratory activities. Within Desmos, students can manipulate graphs, tables, and equations, and they can complete self-checking activities that give them immediate feedback. This session will equip teachers with the knowledge of how to access and edit existing activities, as well as how to build new ones from scratch. It will also focus on specific tools within Desmos, such as anonymous naming and teacher pacing, that help these activities flow smoothly in a classroom setting. This session is designed specifically for math teachers whose students have access to computers; however, it could also be extended to the science classroom.

Kira Learning - A Computer Science Curriculum Free to TN Teachers (Virtual Session)
Tuesday, June 3
9:00 am – 12:00 pm
Computer Science Teachers
Shelby Woods, Computer Science Educator, Sevier County Junior High, Sevierville, TN

Tennessee's legislature and Governor agree with the importance of all students having access to high quality computer science instruction; exemplified in Chapter 979 of the Public Acts of 2022. Kira Learning is a computer science curriculum free for Tennessee teachers to support students on their computer science journey. Kira Learning creates high quality, relevant content, tools, and support to allow teachers and learners to pursue mastery in Computer Science. We aim to provide teachers and students with the means to learn how to code, to discover how coding affects our world, and subsequently how they can adapt to a rapidly changing world.

Beyond the Label: Authentic STEM Experiences for Students with Disabilities (Virtual Session) *NEW
Wednesday, June 4
1:00 pm - 4:00 pm EDT
6th - 12th Sciences (Biology, Environmental Science, Physical Science), STEM, and SPED
Dr. Jessica Minton, Teacher, Houston High School, Germantown, TN

Gain practical knowledge to provide accessible STEM experiences for all students. Participants will analyze scenarios and brainstorm ways to create a more authentic experience for students. Participants will have the opportunity to apply these new strategies using provided STEM/Science lessons.

What's all that Buzz about? You won't bee-lieve the difference a day can make! (In-person Session)
Thursday, June 5
9:00 am – 4:00 pm
K-8 STREAM Teachers
Sherilyn Dawson, M.S. Curriculum and Instruction, Civil Air Patrol
Dave Hoover, Maj Civil Air Patrol, U.S. Air Force Auxiliary

Get hands-on exploration as you use STREAM resources to create low prep, high impact lesson plans to accommodate diverse student abilities, promoting collaboration, creativity, and problem-solving. Inspire the next generation and learn to program (Binary Code, Code.org, Scratch Programming, Snap Circuits, BeeBots, Probots and more). Bonus: Model Rocketry with Maj Hoover. Each participant builds and takes home a Goddard Rocket.

All curriculum products are aligned with national education standards. The stem kits and curriculum products are available free with a one-time Civil Air Patrol Aerospace Educator membership of $35.

Teachers should bring a personal laptop to the workshop.

Bold School Blended Learning (Virtual Session) *NEW
Friday, June 6
9:00 am – 12:00 pm EDT
K-12 Educators/Administrators
Shelby Woods, Computer Science Educator, Sevier County Junior High, Sevierville, TN

Endorsed by John Hattie: "Bold School…needs to be an essential part of every educator's toolbox."

Integrating technology into instruction is crucial for preparing students for future careers. However, it's equally important to incorporate educators' traditional wisdom in designing effective blended learning experiences. Unfortunately, enthusiasm for new technologies can sometimes overshadow proven instructional strategies, resulting in ineffective blended learning.

Bold School reestablishes the teacher's role in effective instruction. It combines Blended pedagogies with Old School wisdom, creating a straightforward framework for Strategic Blended Learning™. This methodology focuses on purposeful technology use to enhance instruction and ultimately improve student achievement.

This professional development session invites anyone interested in adopting a Bold School mindset to effectively blend technology in their classrooms. We will focus on instructional strategies based on the book Bold School by Weston Kieschnick.

Learning Blade (Virtual Session)
Friday, June 6
1:00 pm – 4:00 pm
5th – 9th Grade Teachers
Dr. Michele Linch, Learning Blade State Director

In this session, learn how Learning Blade brings STEM, computer science, CTE, career exploration to life in the classroom. Learning Blade is a fully funded STEM/CS/CTE skill-building and career exploration resource

aligned to 5th-9th grade standards. Students have access to thirteen **"Missions"** to explore exciting career paths and technologies through real-world scenarios. Teachers can access dozens of lesson plans supporting innovative project-based learning and classroom activities. Also in Learning Blade are Introduction to Coding and Artificial Intelligence modules.

Learning Blade is fully funded in Tennessee and there is no charge to use it. It is free to educators in twelve other states, as well. Check here to see if your state is one of them. For the best session experience, teachers need to request their free accounts at least 24 hours prior to the session and bring a device. Accounts can be requested at www.LearningBlade.com/TN.

Minecraft Education – Introduction for Beginners (Virtual Session)
Monday, June 9
9:00 am - 12:00 pm EDT
K – 12 Teachers
Howard Dale, Teacher, Kingsport City Schools

This session will introduce the basics of Minecraft Education and how it can be used in nearly any subject and at any grade level. We will explore how to navigate through the program, how to create worlds, suggested settings for the classroom, and how to utilize the library of premade lessons and classroom activities created by Minecraft Education.

It is strongly recommended that participants download the free trial of Minecraft Education at https://bit.ly/Minecraft_Trial. Note that the trial allows for 25 logins.

Minecraft Education – Advanced (Virtual Session)
Monday, June 9
1:00 pm - 4:00 pm EDT
K – 12 Teachers
Howard Dale, Teacher, Kingsport City Schools

This session is an extension of the Minecraft Education - Introduction for Beginners course. Here, we will delve a bit deeper on how to create and host worlds where students can collaborate on projects or work independently. I'll also share my solution to sharing self-made lessons with my students for easy importing.

It is strongly recommended that participants download the free trial of Minecraft Education at https://bit.ly/Minecraft_Trial. Note that the trial allows for 25 logins.

Minecraft Education – STEM and Project Based Learning (Virtual Session)
Tuesday, June 10
9:00 am - 12:00 pm EDT
K – 12 Teachers
Howard Dale, Teacher, Kingsport City Schools

This session will focus on how students can use Minecraft Education as a STEM tool and how it can easily be used for PBL opportunities. I will share the successes and roadblocks of piloting Minecraft Education in my district for this sole purpose. Having some prior knowledge of Minecraft Education will benefit participants as we explore and play during this session.

If you do not already have Minecraft Education, it is strongly recommended that participants download the free trial at https://bit.ly/Minecraft_Trial. Note that the trial allows for 25 logins.

Instructional Routines and Practices to Support Science Instruction (Virtual Session) *NEW
Wednesday, June 11
9:00 am - 12:00 pm EDT
K-12th Grade Teachers
Emily Butterfield, Teacher, Bearden Middle School, Knoxville, TN
Ginny Brown, Teacher, Bearden Middle School, Knoxville, TN

This session will focus on anchor phenomenon, how to use driving question boards, making and revising models, problematizing, and revisiting answered questions. These routines will help students make meaningful connections and better understand, retain, and generalize their learning.

Please note: Teachers will find it helpful to have their standards available for reference during the workshop.

Using Mirror Talk for Student Reflection and Real Time Feedback (Virtual Session) *NEW
Thursday, June 12
9:00 am - 11:00 am EDT
K-12th Grade Teachers
Emily Butterfield, Bearden Middle School, Knoxville, TN

In this session, we will explore the Mirror Talk web-application by Swivl. This free platform allows teachers to utilize AI to help students reflect and get real time feedback, while teachers get instant, easy to use information on where their students are, their attitudes, and their areas of growth.

Teachers can go to https://mirrortalk.ai/ and sign up for a free account.

Waterwise: Environmental Problem-Solving (Virtual Session) *NEW
Friday, June 13
1:00 pm - 4:00 pm EDT
Middle School & High School Teachers
Barbara Chongtoua, P.E., CFM, Development Services Director for the Mile High Flood District

Join our workshop designed for educators, focused on the intersection of science and engineering in solving environmental problems. Discover how disciplines such as hydrology, hydraulics, geomorphology, ecology, and an understanding of human impact are crucial in addressing challenges related to natural and urban watersheds. Explore the fundamental principles of the water cycle and its application in stormwater management, alongside the critical role of stormwater and stream restoration engineers in mitigating environmental and infrastructural issues. This workshop offers educators a unique opportunity to enrich their curriculum with real-world applications of scientific concepts, fostering a deeper appreciation for interdisciplinary approaches to environmental problem-solving.

From Nothing to Something Awesome: How One School Built a Makerspace Program from the Ground Up (Virtual) *NEW
Monday, June 16
10:00 am - 12:00 pm EDT
K-12 Teachers
Kyle Nowicki, Teacher, Chicago Public Schools

A neighborhood public school on the Southwest side of Chicago has built a Makerspace design program from literally nothing. In this workshop, you'll learn how to start your Makerspace program or enhance the one you already have!

National Geographic's Slingshot Challenge (In-person Session) *NEW
Tuesday, June 17
9:00 am - 12:00 pm EDT
Middle School & High School Teachers
BJ Arvin, Knox County High School Teacher

Can you really change the world in one minute? We believe you can. Students are the voice of the future and the time to act is now! Across the planet, young people are becoming problem-solvers, risk takers, and decision-makers who are shaping the future of the planet. Students are the next National Geographic Explorers, and your work begins today. The National Geographic Society uses the power of science, exploration, education, and storytelling to illuminate and protect the wonder of our world. Now, it is the students' turn. The Slingshot Challenge is an innovative youth challenge that gives young problem-solvers, advocates, and stewards for the planet a chance to focus their message and be heard.

Mystery in the Classroom: A Forensic Chemistry Workshop for Teachers (In-person Session) *NEW
Wednesday, June 18
9:00 am - 12:00 pm
6th-12th Grade Teachers
Chelsi Day, Chemistry Teacher, Walker Valley High School

In this session, teachers will acquire the skills to engage middle school and high school students through the captivating world of forensic chemistry. Participants will learn how to design and implement a classroom mystery that can be unraveled through the collection and analysis of evidence. This hands-on workshop covers a variety of forensic techniques including chromatography, fingerprint analysis, shoe imprint analysis, blood typing, and fiber analysis, equipping teachers with the knowledge and tools to bring the intrigue of forensic science into their curriculum.

Scientific Studio (In-person Session) *NEW
Thursday, June 19
9:00 am - 12:00 pm
K-5 Educators
Jessica Ordóñez, Education Director, Children's Museum of Oak Ridge

Explore the exciting connection between science and art in this hands-on professional development session designed for K-5 educators. This session integrates scientific concepts into engaging, art-based activities. From experimenting with solubility and light refraction to creating gravity art, educators will learn how to

enhance STEAM learning through interactive projects. Participants will leave with ready-to-use lesson ideas, connections to curriculum standards, and the confidence to bring science-inspired creativity into their classrooms.

Give Artificial Intelligence a Try (Virtual Session)
Thursday, June 19
1:00 pm - 3:00 pm
4th - 12th Grade Teachers
Lauren Wilmoth, Teacher, Oak Ridge High School, Oak Ridge, TN

Most of us, including our students, interact daily with Artificial Intelligence (AI) technology without recognizing it. From Netflix recommendations and targeted ads to email filters and Google navigation, AI has become an integral part of our lives. In this professional development, we will explore fun, interactive ways to introduce and define AI technology with students. AI can contain bias and can be used for good or evil. By discussing these issues with students, we will be able to improve their digital literacy and develop the critical thinking skills necessary for navigating through the wealth of information available to them online. No experience or knowledge of AI is necessary for this training.

Protect Yourself and Your Students Against Misinformation (Virtual Session) *NEW
Friday, June 20
1:00 pm – 3:00 pm
K-12 Teachers
Lauren Wilmoth, Teacher, Oak Ridge High School, Oak Ridge, TN

In today's rapidly evolving digital landscape, the ability to discern fact from fiction has become a critical skill for educators and students alike. Misinformation, if left unchecked, can not only skew understanding and perception but can also significantly impact decision-making processes. This workshop is designed to equip educators with research-based tools and strategies necessary to detect misinformation and foster an environment of critical thinking and media literacy in the classroom.

ORISE Competitions (Virtual Session) *NEW
Monday, June 23
9:00 am - 11:00 am EDT
K-12 Teachers
Emily Butterfield, Teacher, Bearden Middle School, Knoxville, TN

This session will serve as an introduction to the ORISE student and teacher competitions that are available free on the website. Student competitions can be utilized as a class activity or extension opportunity. Join me to learn how to maximize this resource to your benefit. You'll walk away with tips and tricks for helping yourself and your students win amazing prizes! The workshop will consist of one hour of information and one hour of supported work time.

American Nuclear Society Educator Workshop (Virtual Session)
Tuesday, June 24
1:00 pm - 4:00 pm EDT
6th-12th Grade Teachers
American Nuclear Society

The American Nuclear Society (ANS) Educator Workshop provides educators with content knowledge of nuclear science and technology and methods for conveying that knowledge to students. Developed primarily for educators working with students from grades six through the first year of college, the workshop covers many basic concepts of nuclear science, including radiation, radioactive decay, isotopes, measurement of radioactivity, fission, fusion, the nuclear fuel cycle, applications of nuclear science and technology, and others. The workshop will also introduce ANS educational resources and materials that support educator goals. Each educator will receive a free ANS Cloud Chamber Kit.

How Learning Happens: An Introduction to Cognitive Science for Teachers (Virtual Session) *NEW
Wednesday, June 25
1:00 pm – 4:00 pm EDT
K-12 Educators and Instructional Leaders
Dr. Amy Lyttle, Science Teacher, Oak Ridge Schools

This interactive session will introduce educators to how memory and learning work, how to apply cognitive science principles in the classroom, and how to avoid common neuromyths that may hinder student success. Participants will explore research-backed strategies for improving knowledge retention, engagement, and comprehension across all subjects and grade levels. This session is designed for K-12 educators and instructional leaders looking to enhance their teaching practices with evidence-based instructional techniques. Participants are encouraged to have a cell phone, computer, or similar device to connect to the internet to participate in surveys and reflection activities.

Bricks2BeamsTN Middle School Outreach Program (In-Person Session) *NEW
Thursday, June 26
10:00 am – 11:30 am EDT
7th & 8th Grade Teachers
Robert Saethre, Chief Engineer, Neutron Sciences at Oak Ridge National Laboratory

Bricks2Beams has created an exciting and educational outreach program designed to introduce middle school students to the world of particle accelerators through hands-on LEGO® model building. This program offers 6th to 8th graders a unique opportunity to explore the design and operation of the Spallation Neutron Source (SNS) while sparking their interest in Science, Technology, Engineering, and Mathematics (STEM). This workshop will explore the three-day curriculum covering an introduction to Oak Ridge National Laboratory (ORNL), the Spallation Neutron Source (SNS), and the fundamentals of particle accelerators, instruction on building a LEGO model of key SNS components, and discussion of diverse careers that contribute to the groundbreaking science at SNS.

Enhancing Science Education with the SeER's Educator Grant Programs (Virtual Session) *NEW
Thursday, June 26
2:30 pm – 4:00 pm EDT
K-12 Teachers
Dr. Ross J. Toedte, SeER President & CEO

Unlock the power of research in your classroom! This session is dedicated to the Science Education Research Foundation's (SeER) grant programs, designed specifically for educators passionate about elevating science education through research. This workshop aims to introduce teachers to the foundational principles and opportunities provided by SeER, a 501(c)(3) organization committed to funding both the creation and application of science education research. At the heart of SeER's mission is the belief that access to quality science education is a universal right. Recognizing the unique learning paths of individual students, SeER emphasizes the critical role of tailored, research-driven science education strategies in fostering effective learning outcomes. Participants will leave this session equipped with a deeper understanding of the SeER grant programs and empowered with the knowledge and resources to pursue up to $1500 in SeER funding for their own educational projects.

Increasing Engagement and Problem Solving in the Secondary Math Classroom (Hybrid Session) *NEW
Friday, June 27
9:00 am - 12:00 pm EDT
6th – 12th Grade Teachers
Megan Webb, Math Teacher, Walker Valley High School

Join us for an engaging professional development session designed to enhance your teaching practices with innovative strategies, specifically tailored for the secondary math classroom! In this workshop, you'll explore how to effectively integrate online tools like Desmos to support content instruction and encourage dynamic student exploration. We'll also dive into the benefits of using Vertical Non-Permanent Surfaces (VNPS) to foster collaborative problem-solving and active learning. Additionally, you'll learn how to implement station rotations to create an interactive, student-centered classroom environment that promotes deeper understanding and engagement.

The session will also focus on the essential planning and preparation needed for delivering student-centered lessons that align with secondary math standards. You'll gain practical strategies for designing lessons that not only engage students but also offer opportunities for exploration, collaboration, and problem-solving. Whether you're looking to incorporate technology seamlessly into your lessons or improve your classroom's overall structure, this session will provide you with actionable tools and techniques you can immediately apply in your classroom.

A teacher DESMOS account would be beneficial for the participants to have, but it is not required and the account is free! The link to create that account can be found here.

Wildly Fun Animal Observers with Zoo Knoxville (In-person Session) *NEW
Friday, June 27
1:00 pm – 2:00 pm EDT
K – 8th Grade Teachers
Louise Hargis, School Education Coordinator, Learning Blade

In this workshop teachers will get to participate in one of our most popular programs with hands-on activities and scientific inquiry. Discover the unique adaptations of animals that help them to survive in the wild! This interactive program gives students the opportunity to put their skills of scientific observation to the test as they investigate a selection of unique biofacts (animal skins, bones, feathers, and more!) to figure out how each animal uses them to eat, move, defend themselves, and so much more!

So you're a Grade 6-12 teacher with a robot kit…Now what? (In-person Session) *NEW
Monday, June 30
9:00 am – 12:00 pm EDT
6th – 12th Grade Teachers
Nathan Kenner, Engineering Teacher, West High School, Knoxville, TN

This workshop will provide participants with the opportunity to increase their utilization of any robotics materials they have (or want to have!) in their school. We will explore the various options for robotics education - including Arduinos, Raspberry Pis, Boe Bots, Spheros, and XRPs - and options and examples for using robotics in your classroom will be shared. You will walk away with specific lesson plans or ideas that you will be able to implement with your next robotics unit. Participants are encouraged to bring any materials and kits from their school that would like to use.

Utilizing 3D Printers to Level Up Your Science Education (In-person Session) *NEW
Monday, June 30
1:00 pm – 4:00 pm EDT
6th – 12th Science, Math, and CTE Teachers
Nathan Kenner, Engineering Teacher, West High School, Knoxville, TN

This workshop will focus on providing participants with the knowledge and skills necessary to turn a 3D printer into an asset for their teaching practice. We will explore some examples of printed products that can be used by teachers in math and science and we will learn how to create products that meet the needs of your classroom. Teachers should bring a personal laptop and create an education account with Onshape.com if they would like to explore creating their own products.

Asynchronous Online Professional Development Courses

In addition to the live professional development opportunities above, ORISE is glad to have two asynchronous courses available to educators! Head over to https://orise.orau.gov/k12/teacher-professional-development.html to enroll in and take these at your leisure!

These courses are self-guided, autonomous, and asynchronous. There are no discussion boards, presenter to ask questions, or anyone actively monitoring your progress. The courses are designed to take up to four hours to complete. It is up to you to go through the material, complete the assignments, and take whatever you can from these courses! Everyone has a different combination of content, context, and student needs

that will determine what you take away from these courses. Upon completion of all requirements, you will be able to download a certificate that certifies your completion of the professional development.

Applying Real-World Data in the Classroom with CEDR is an online professional development course with the purpose of providing middle and high school teachers with the skills and knowledge to utilize data sets from the Comprehensive Epidemiologic Data Resource (CEDR) in their classrooms. CEDR is the U.S. Department of Energy (DOE) electronic database comprised of health studies of DOE contract workers and environmental studies of areas surrounding DOE facilities. The data are free to use in your classroom! The lesson plan provided in the course integrates math, biology, American history, and English while using health data from actual workers in Oak Ridge, TN to teach the standards.

Developing Your Students' Data Literacy Skills is an online professional development with the purpose of supporting and equipping teachers of middle and high school students. The purpose of this course is to help you identify and incorporate opportunities for your students to practice and hone their data skills. Collecting, analyzing, interpreting, and presenting data are key scientific practices that also translate easily into the real world. This course offers methods of data incorporation, outside of actual investigations, that can be utilized quickly and consistently.

Incorporating Inquiry into Your Classroom is an online professional development with the purpose of supporting and equipping teachers to be able to provide authentic exploration to their students. The purpose of this course is to help you incorporate inquiry into your classroom without rewriting your entire curriculum.