

NSTA AREA CONFERENCE ON SCIENCE EDUCATION

CINCINNATI, OH

NOVEMBER 14-16, 2019



Science: The Bridge to Endless Possibilities

www.nsta.org/cincinnati

#NSTA19



National
Science
Teaching
Association



TODAY'S LABS CREATE TOMORROW'S LEADERS

Nearly all of the
30 fastest-growing
occupations in the
next decade will
require at least some
background in STEM.¹

¹ BUSINESS CENTER FOR A COLLEGE-
AND CAREER-READY AMERICA

Vernier Software & Technology helps teachers instill curiosity and hone problem-solving skills through innovative technology and engaging investigations. With our technology, teachers can prepare students for careers in an ever-evolving, STEM-focused world.

INSPIRE STEM CURIOSITY IN YOUR STUDENTS.

Visit learn.vernier.com



**National
Science
Teaching
Association**

Cincinnati, OH Area Conference
NOVEMBER 14–16, 2019



NSTA 2019 Area Conference on Science Education ***Science: The Bridge to Endless Possibilities*** Cincinnati, Ohio • November 14–16, 2019

Sponsors and Contributors	2
Conference Committee	2
President and Committee Welcomes	3

Registration, Travel, and Hotels

Meeting Location and Times	4
Express Check-In	4
New Badge Reprint Fee	4
Purchasing Ticketed Events	4
Getting Around Town	4
Transportation Discounts	4
Hotel Map of Cincinnati	5
Housing Questions	5

Cincinnati Resources

Exhibits	6
Presenters and Presiders Check-In	6
Wi-Fi at Convention Center	6
NSTA Community Hub	6
NSTA Conference App	6
NSTA Store	6
Graduate-Level Credit Opportunity	6
Online Session Evaluations / Tracking Professional Development	7
SECO Annual Meeting and Awards Recognition	7
Floor Plans	8–11
Future NSTA Conferences	12

Cincinnati Program

Call for Sessions	12
2020 Boston National Conference	13
Highlights	14
Featured Speakers	15
Strands	16
First-Timer Session	16
Short Courses	18
Three Dimensions of the NGSS	20
<i>Thursday Daily Program</i>	<i>22</i>
<i>Friday Daily Program</i>	<i>31</i>
<i>Saturday Daily Program</i>	<i>43</i>
<i>Exhibitors</i>	<i>47</i>

**Presenters, key information,
and complete session descriptions
on Conference App:**

Visit: www.nsta.org/conferenceapp

National Science Teaching Association

1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100
E-mail: conferences@nsta.org
www.nsta.org

NSTA Affiliates

Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
Association of Science-Technology Centers (ASTC)
Council for Elementary Science International (CESI)
Council of State Science Supervisors (CSSS)
National Association for Research in Science Teaching (NARST)
National Middle Level Science Teachers Association (NMLSTA)
National Science Education Leadership Association (NSELA)
Society for College Science Teachers (SCST)
WIDA

Thank You!

We at NSTA wish to express our heartfelt thanks to the members of SECO (Science Education Council of Ohio) and KSTA (Kentucky Science Teachers Association) for the many hours of time they volunteered in planning this conference.



Contributors

American Chemical Society
American Society for Engineering Education

Cincinnati Conference Committee

Program Representatives

Scott Bloom

Director of Curriculum and Instruction
Piqua City Schools
Piqua, OH

Andrea Redinger

Biology / Biotechnology Instructor and Gifted Coordinator; and Pennsylvania Science Curriculum Council President
Greensburg Salem High School
Greensburg, PA

Danaé Ellen Wirth

NSTA Director, District X
Science Education Consultant
Goshen, IN

Conference Advisory Board Liaison

Becky Ashe

Founding Principal
L&N STEM Academy
Knoxville, TN

Strand Leader: Bridging the Three Dimensions of Science Teaching and Learning: Practices, Core Ideas, and Crosscutting Concepts

David Vernot

Curriculum Consultant
Butler County Educational Service Center
Hamilton, OH

Strand Leader: Building Strong Bridges: Reinforcing the Connection Between Science and Literacy

Bill Badders

2013–2014 NSTA President
Cleveland Heights, OH

Strand Leader: Constructing Bridges: Building Lifelong Appreciation and Passion for Science

Shannon Hudson

Middle School Teacher
Crawfordsville Middle School
Crawfordsville, IN

Volunteers Manager

Jill Arminio

Academic Coach, Science Grades 3–12
Mason City Schools
Mason, OH

Manager of Services for People with Special Needs

Brian McDowell

6th, 7th, and 8th Grades Science Teacher
Mason County Middle School
Maysville, KY

Guides Co-Managers

Heather Mitchell

Science Teacher
Colerain High School
Cincinnati, OH

Eryn Ruder

Science Instructor
Scarlet Oaks Career Campus
Cincinnati, OH

President's Welcome: Making Science Learning Lifelong, Life-wide, and Life-deep



Welcome to the NSTA Area Conference in Cincinnati. The conference committee has done an outstanding job of embracing my Presidential Theme: *Making Science Learning Lifelong, Life-wide, and Life-deep*.

- *Lifelong*: Making science learning something people engage in throughout their lives.
- *Life-wide*: Making science learning something people experience in a variety of situations throughout the day/year (e.g., school, home, afterschool, museums, and summer camp).
- *Life-deep*: Encouraging people to engage in science learning at a level that is right for them (e.g., enjoy following science in the media; participating in a citizen science project; becoming an amateur astronomer; becoming a science-based professional).

You will see that the conference uses the many bridges spanning the mighty Ohio River around Cincinnati to think about how science is pervasive throughout life, especially in the strand *Constructing Bridges: Building Lifelong Appreciation and Passion for Science*. This strand emphasizes how educators must provide students with instructional experiences that help them develop the habits of science they will carry through life. The other two strands also build on the city's bridges to the rest of the region. *Bridging the Three Dimensions of Science Teaching and Learning: Practices, Core Ideas, and Crosscutting Concepts* allows educators to strengthen their capacity with the fundamental understandings of science (disciplinary core ideas), the "doing" of science (science and engineering practices), and the multidisciplinary themes (crosscutting concepts), for genuine and effective practice for all learners. *Building Strong Bridges: Reinforcing the Connection Between Science and Literacy* helps educators bridge literacy skills across disciplines to address diverse learners' needs.

My thanks to the conference planning committee for developing an outstanding program with more than 300 sessions, exhibit hall displays, and ways for you to network with science educators across the region. May you have an outstanding experience during your time at the conference.

Dennis Schatz

2019–2020 NSTA President

Welcome to Cincinnati: Science: The Bridge to Endless Possibilities



Angela McMurry



Paula Roberts



Leslie Silbernagel

Welcome to the 2019 NSTA Cincinnati Area Conference. On behalf of the science education community in Ohio, we welcome you to Cincinnati, home to the first professional baseball team in the world, Skyline Chili, the National Underground Railroad Freedom Center, and many national innovative corporations.

The Cincinnati Conference Committee wants you to engage in exciting learning experiences focused on *Science: The Bridge to Endless Possibilities*. We have organized a wide variety of experiences across all grade levels and disciplines that will challenge you and help you grow your practice as a science educator and leader.

The conference is organized around these three strands:

- *Bridging the Three Dimensions of Science Teaching and Learning: Practices, Core Ideas, and Crosscutting Concepts*
- *Constructing Bridges: Building Lifelong Appreciation and Passion for Science*
- *Building Strong Bridges: Reinforcing the Connection Between Science and Literacy*

From the keynote speaker Luke Dollar to featured speakers, hands-on workshops, presentations, short courses, meetings, and cutting-edge products and services in the Exhibit Hall, you are sure to find innovative ideas and practices that will assist you in preparing students for the science in their everyday world. We know that you will have a terrific learning experience while you are with us and hope that you meet other like-minded educators who will become friends and colleagues. We are all in this together!

We look forward to meeting you and hope you take advantage of the many possibilities to enhance your teaching at this conference.

2019 Cincinnati Area Conference Committee Leaders
Angela McMurry, Paula Roberts, and Leslie Silbernagel

Conference Chair

Angela McMurry

Biology Instructor / SECO Past President
Arcanum High School
2011 Trojan Ave.
Arcanum, OH 45304
mcmurry.angela@gmail.com

Program Coordinator

Paula Roberts

Science Instructional Supervisor
Mahoning County Educational Service
Center
7320 N. Palmyra Rd.
Canfield, OH 44406
p.roberts@mahoningesc.org

Local Arrangements Coordinator

Leslie Silbernagel

Curriculum Supervisor / SECO President
Northwest Local School District
3240 Banning Rd.
Cincinnati, OH 45239
leslie.silbernagel@gmail.com



Registration, Travel, and Hotels

Meeting Location and Times

The conference headquarters hotel is Hilton Cincinnati Netherland Plaza. Conference registration, Express Check-in, the exhibits, and the NSTA Store will be located at Duke Energy Convention Center. Sessions will be held at the Convention Center, as well as the Hyatt Regency Cincinnati.

The conference will begin with concurrent sessions on Thursday, November 14, at 8:00 AM and end on Saturday, November 16, at 12 Noon.

Express Check-In

Registration is required for participation in all conference activities and the exhibits. Express Check-In and Attendee Services are located in the Elm Street East Concourse of the Convention Center. The NSTA Store is located in Hall A. Proceed to Express Check-In to print your official badge and secure conference materials.

Express Check-In and Attendee Services will be open the following hours:

Wed., Nov. 13	5:00–7:00 PM
Thu., Nov. 14	7:00 AM–5:00 PM
Fri., Nov. 15	7:00 AM–4:00 PM
Sat., Nov. 16	7:30 AM–12 Noon

New Badge Reprint Fee

If you misplace or forget your badge, there will be a reprint fee of \$20 for a replacement badge. To have a replacement badge printed, please proceed to Attendee Services and present your personal ID to be issued a replacement. *Note:* Only **ONE** replacement badge will be issued.

Purchasing Ticketed Events

Short courses require a separate fee and ticket. You may purchase tickets, space permitting, at NSTA Attendee Services. See page 18 for details.

Getting Around Town

Cincinnati's compact downtown makes getting around easy, and you will be able to walk to many local attractions and restaurants. The Cincinnati Bell Connector is a streetcar that travels on a loop from Second Street (at The Banks on the riverfront) to Henry Street (just north of the Findlay Market in Over the Rhine). Connector rates are \$1/two hours or \$2/day pass. The stops are one to two blocks from downtown hotels and three blocks from the Convention Center. Visit www.cincyusa.com/transportation for details.

Transportation Discounts

Visit www.nsta.org/cincinnatiattravel for details.

Download the Conference App!

Connect. Share. Engage.

By downloading the conference app, you'll be able to easily manage your schedule and maximize your conference experience. Start mapping out your journey today!

With the app, you'll be able to:

- Search sessions, exhibitors, and speakers to build a schedule of your favorites
- Filter the sessions you're interested in by strand and type to customize an agenda that is just right for you
- Access maps of the Exhibit Hall, Convention Center, and hotels while you are on the move
- Pull up the all-important Wi-Fi information
- Learn more about the exhibitors and sponsors
- Find out where NSTA events are happening
- Tweet while you are in sessions or attending events
- Receive important updates and notifications

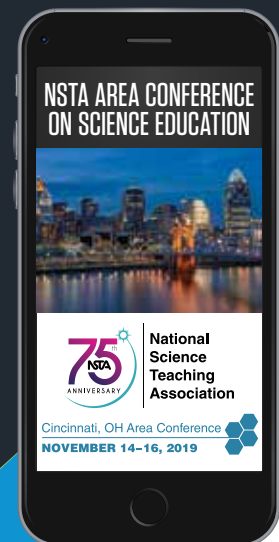
Available for download on



iPhone + iPad



Android



National
Science
Teaching
Association

Download now at
www.nsta.org/conferenceapp



Housing Questions or Concerns?

If you have questions or concerns regarding your housing, contact Orchid.Events (during business hours) Monday through Friday, 9:00 AM–8:00 PM (ET) at 877-352-6710 (toll-free) or 801-505-4611. After hours and on Saturday, call 801-505-4134.



1. **Hilton Cincinnati Netherland Plaza**
(Headquarters Hotel)
35 W. 5th St.
2. **Hyatt Regency Cincinnati**
151 W. 5th St.
3. **The Westin Cincinnati**
21 E. 5th St.

Shuttle service will not be provided as all hotels are within walking distance of the Convention Center.



NSTA Exhibits

The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You'll discover something new and exciting in the world of science education.

Go to **Express Check-In** to print your official badge. This badge is your "ticket of admission" to the Exhibit Hall and all non-ticketed conference activities. A map display of the Exhibit Hall is accessible via our Conference app. A complete list of exhibitors is on page 47.

Exhibit Hall Hours. Located in Exhibit Hall A of the Convention Center, exhibits will be open for viewing during the following hours:

Thu., Nov. 14	11:00 AM–5:00 PM
Fri., Nov. 15	9:00 AM–4:00 PM
Sat., Nov. 16	9:00 AM–12 Noon

Exhibitor Workshops. Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis.

Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in at the Presenters/Presiders counter in the Attendee Services Area.

Wi-Fi at Convention Center

Complimentary Wi-Fi is available in all public spaces, lobbies, common areas, and meeting rooms of the Duke Energy Convention Center. It is **not** accessible in the Exhibit Hall.

Network: **NSTA Conference**
Password: **science2019**

Note: Password is case sensitive.

NSTA Community Hub

Be sure to stop by the NSTA Community Hub, located at Booth #233 in the Exhibit Hall. While you're there, ask us about our #reachforthestars initiative and redeem your coupon to spin our 75th Anniversary Prize wheel! Find out more about the benefits of becoming an NSTA member, our professional learning opportunities, and NSTA Press books. The NSTA Community Hub will be open during exhibit hall hours.

NSTA Conference App

The NSTA Conference app provides all the tools necessary for a successful experience. Search sessions, exhibitors, and speakers to build a schedule of your favorites. Features include the ability to view session and workshop listings by time and presenter, as well as maps of the Convention Center, Hyatt, and the Exhibit Hall. Plus, you're able to find key information on conference resources, such as First Aid, AV rooms, and Business Services. Available for iPhone and Android devices, download from the respective app stores or visit www.nsta.org/conferenceapp.

NSTA Store

Visit us at the NSTA Store to explore a wide selection of resources and gear you'll love! You'll find hundreds of books that uniquely blend accurate science content with sound teaching strategies for science educators of all grade ranges and disciplines.

Graduate-Level Credit Opportunity

Cincinnati conference participants can earn one (1) graduate-level credit in professional development through **Ashland University** Southwest Ohio Center course #EDU 6260 C2. To obtain a credit, you must be registered for the Cincinnati conference, complete the required assignments, and pay a fee of \$180. An NSTA transcript is also required. Register for one graduate-level credit by Friday, November 29, 2019. For complete details, visit bit.ly/31MTxT. Questions should be directed to Patrick Crahan, director at Ashland University Southwest Ohio Center, at e-mail: crahan.pat@greatoaks.com or stop by the SECO booth located in the Hall A Pre-Function space of the Convention Center during the following hours when an Ashland University representative will be on hand:

Thursday	11:30 AM–12:30 PM
Friday	11:30 AM–12:30 PM
Saturday	11:30 AM–12 Noon

Online Session Evaluations and Tracking Professional Development

All attendees can evaluate sessions online while simultaneously tracking their professional development certification.

Help NSTA's **GREEN** efforts by completing session evaluations online **November 14–25, 2019**, while the session is fresh in your mind! During the conference, session evaluations can be completed on the computers at the Presenters/Presiders booth in the Attendee Services Area. **And this year, we're giving away an Apple iPad mini 5 Wi-Fi tablet to a lucky attendee who completes a session evaluation!** Remember, the more sessions you attend and evaluate, the more chances you have to win!

To evaluate a session using our online browser, attendees should follow these steps:

Note: Our session evaluation system is designed to work from a computer using our online browser. Do **not** evaluate sessions using smartphones/tablets. **Please note that session evaluations cannot be completed via the Conference app.**

- Go to the designated conference site link. www.nsta.org/cincinnati
- Click on the “**Attendee Info**” tab and navigate to the “**Attendee Service Center Login**.”
- Login: E-mail; Password
- Select the **Session Evaluations** tab.
- Find the session that you have attended, then click on the **Start** button.
- Follow the step-by-step process.
- Repeat for each session to evaluate.

On or before **November 26, 2019**, attendees will be e-mailed instructions for accessing their respective transcripts. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.



SECO Annual Meeting and Awards Recognition



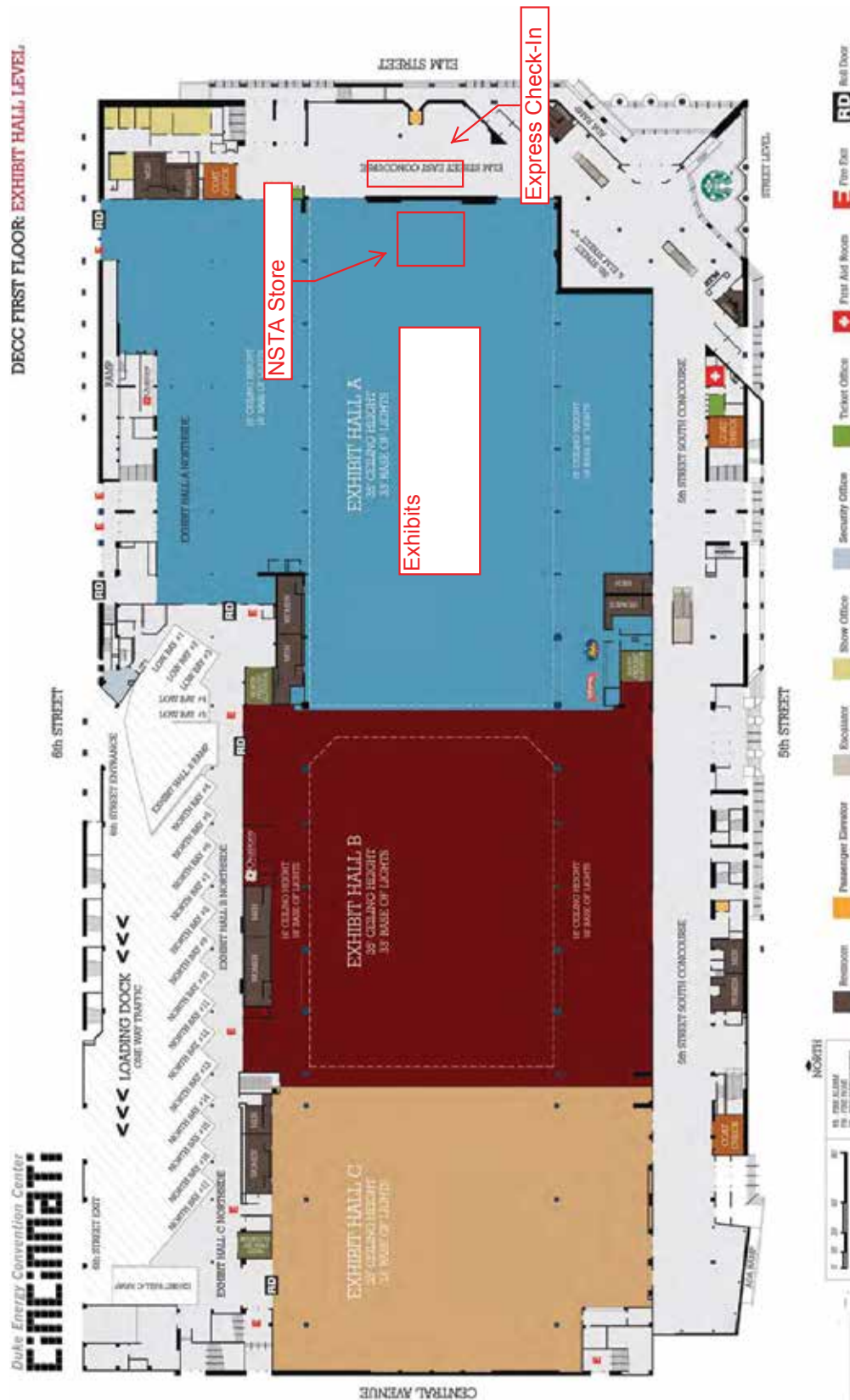
Science Education Council of Ohio (SECO) would like to cordially invite its membership to the Annual Meeting and Awards Recognition.

Friday, November 15 • 4:00–5:30 PM
Regency Ballroom A, Hyatt Regency Cincinnati

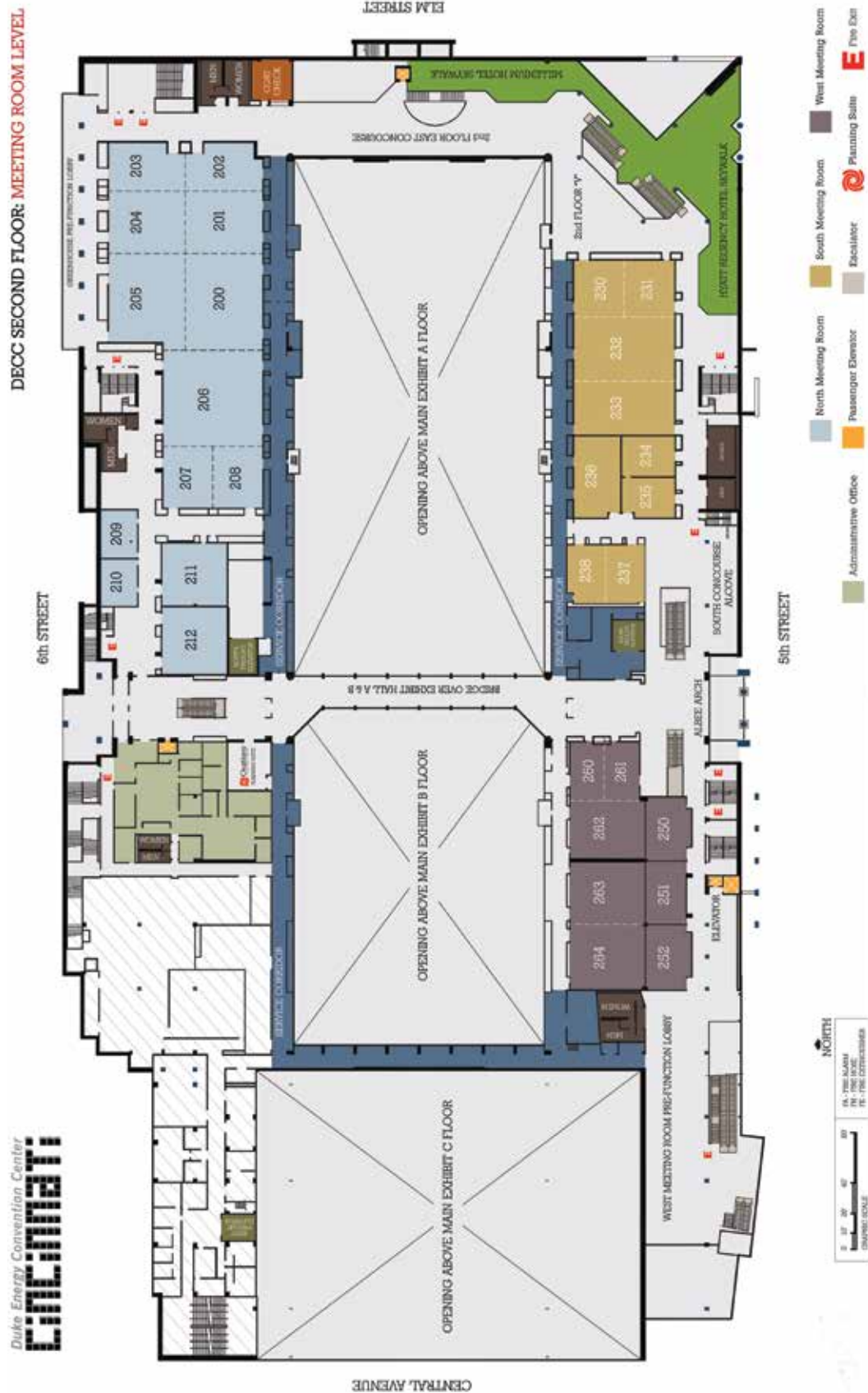
Light snacks and cash bar available for attendees. Come hear what's new with SECO, recognize our annual award winners, and get information about upcoming events in 2020–2021!



Duke Energy Convention Center



Duke Energy Convention Center



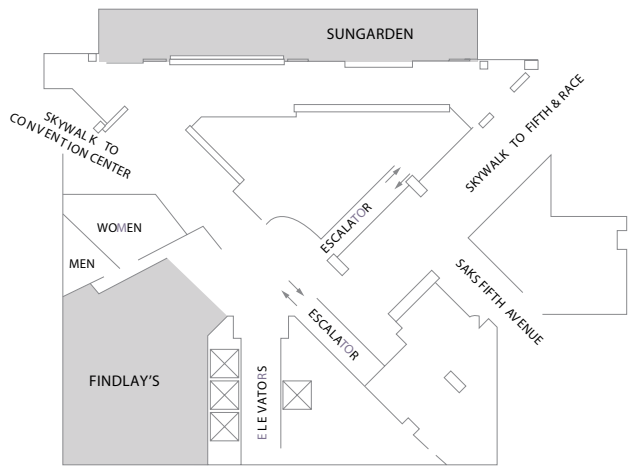
Duke Energy Convention Center

DECC THIRD FLOOR: BALLROOM LEVEL

Duke Energy Convention Center
Cincinnati

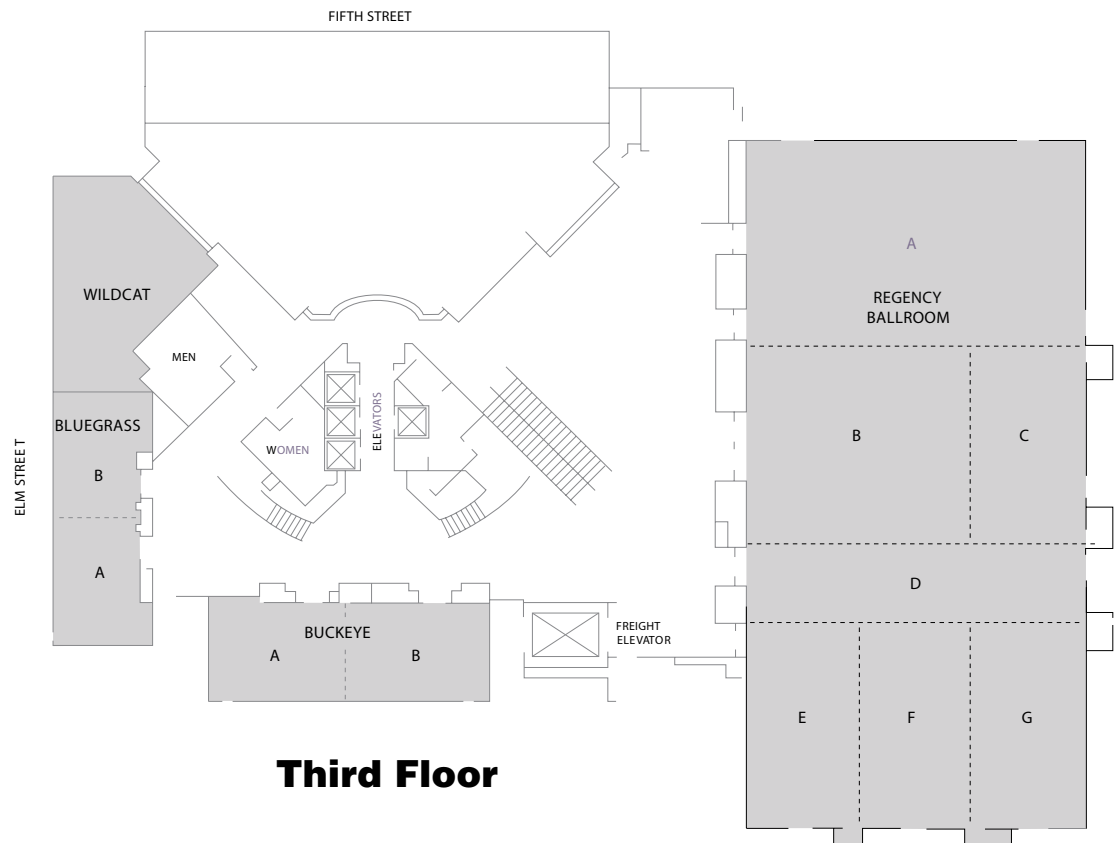
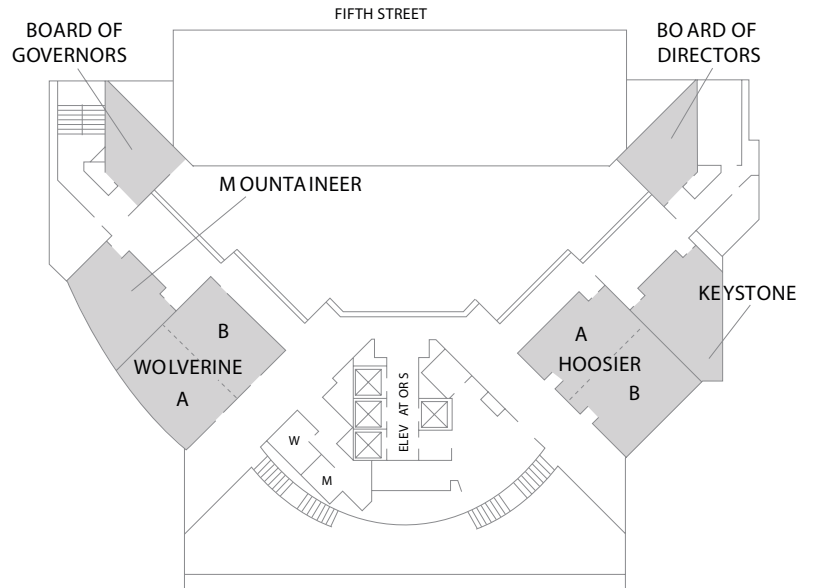


Hyatt Regency Cincinnati



Second Floor

Fourth Floor



Third Floor

Conference Resources • Future Conferences

All cities are subject to change pending final negotiation.

National Conferences on Science Education

Boston, Massachusetts
April 2–5, 2020

Chicago, Illinois
April 8–11, 2021

Houston, Texas
March 31–April 3, 2022

9th Annual STEM Forum & Expo, hosted by NSTA

Louisville, Kentucky—July 22–24, 2020

10th Annual STEM Forum & Expo, hosted by NSTA

Detroit, Michigan—July 28–30, 2021

Area Conferences on Science Education

2019 Area Conference

Seattle, Washington—December 12–14

2020 Area Conferences

Pittsburgh, Pennsylvania—October 29–31
New Orleans, Louisiana—November 19–21
Phoenix, Arizona—December 10–12

2021 Area Conferences

Portland, Oregon—October 28–30
National Harbor, Maryland—November 11–13
Los Angeles, California—December 9–11

Share Your Ideas!

NSTA's Conferences on Science Education

Have an idea for an inspiring presentation or workshop on science or STEM education? Submit a session proposal today for...



**9th Annual
STEM Forum & Expo,
hosted by NSTA**
Louisville, KY
July 22–24, 2020

Proposal Deadline:
12/03/2019



2020 Area Conferences
Pittsburgh, PA
October 29–31
New Orleans, LA
November 19–21
Phoenix, AZ
December 10–12

Proposal Deadline:
1/15/2020



**2021
National Conference**
Chicago, IL
April 8–11

Proposal Deadline:
4/15/2020

To submit a proposal, visit www.nsta.org/conferenceproposals



NATIONAL CONFERENCE ON SCIENCE EDUCATION

SAVE THE DATE



SCIENCE

EXPANDING THE VISION

BOSTON

April 2-5
2020

OVER 1,200 SESSIONS

NETWORK WITH
MORE THAN 10,000
EDUCATORS

350+ EXHIBITORS
WITH CUTTING-EDGE
RESOURCES

AND MUCH MORE!

NSTA is holding its 68th national conference next year

The theme is 20/20 Science: Expanding the Vision. Conference program strands include:

- The Long View: Building a Lifelong Passion for Science
- Learning Science in All Spaces and Places: Near and Far
- Thinking, Acting, and Communicating Like Scientists: A Focus on Disciplinary Literacy
- Aligning the Lenses: Authentic, Three-Dimensional Measurement of Student Learning

For more information, please visit
www.nsta.org/boston

#NSTA20



**Presenters,
key information,
and complete session
descriptions on
Conference App:**

**Visit: [www.nsta.org/
conferenceapp](http://www.nsta.org/conferenceapp)**

Thursday, November 14

8:00–9:00 AM	First-Timer Conference Attendees' Orientation 16, 24 (Is This Your First NSTA Conference?)
9:15–10:30 AM	Keynote Presentation: Luke Dollar, <i>sponsored by National Geographic Learning Cengage</i> 15, 24
11:00 AM–5:00 PM	Exhibits 22 (exclusive exhibit / exhibitor workshop hours: 11:00 AM–12:30 PM)
2:00–3:00 PM	Featured Presentation: Jacqueline Barber. 15, 27
3:30–4:30 PM	Featured Student Panel: Stewards of the Planet (Moderator: Luke Dollar) 27


Friday, November 15

8:00 AM–1:30 PM	High School Chemistry Day 34, 38
8:00 AM–1:30 PM	Middle School Chemistry Day 39, 40
8:00 AM–1:30 PM	Engineering Day 31, 35
9:00 AM–4:00 PM	Exhibits 31 (exclusive exhibit / exhibitor workshop hours: 3:00–4:00 PM)
9:30–10:30 AM	Featured Presentation: Michelle LaRue 15, 33
2:00–3:00 PM	Featured Presentation: Stephen Pruitt. 15, 37
2:45–3:30 PM	Meet the Presidents and Board/Council 38

Saturday, November 16

9:00 AM–12 Noon	Exhibits 43
-----------------	-----------------------





**Grades K–12
2019–2020 Catalog**

Mathematics
Science
Social Studies
Reading / Language Arts
ESL/ELD
World Languages
Advanced, Honors, and Electives
Career and Technical Education

NGL.Cengage.com/Catalogs

Enjoy the view
of our K–12 science
programs in our
new catalog!



Keynote Presentation: Luke Dollar, National Geographic Explorer, and Bashore Distinguished Professor, Catawba College
(Sponsored by National Geographic Learning | Cengage)

Schools Saving Species?

Thursday, Nov. 14

9:15–10:30 AM

Grand Ballroom B, Convention Center
(page 24)

Also, Luke will be moderator for a featured student panel: Stewards of the Planet (page 27).

Featured Presentations

Thursday, Nov. 14

2:00–3:00 PM • Grand Ballroom A
Convention Center



Jacqueline Barber
Associate Director,
The Lawrence Hall of Science
University of California, Berkeley
(page 27)

*Strand: Building Strong Bridges:
Reinforcing the Connection Between
Science and Literacy*

Friday, Nov. 15

9:30–10:30 AM • Grand Ballroom A
Convention Center



Michelle LaRue
Research Ecologist
University of Canterbury
Christchurch, NZ
(page 33)

*Strand: Constructing Bridges: Building
Lifelong Appreciation and Passion for
Science*

Friday, Nov. 15

2:00–3:00 PM • Grand Ballroom A
Convention Center



Stephen Pruitt
President
Southern Regional Education Board
Atlanta, GA
(page 37)

*Strand: Bridging the Three
Dimensions of Science Teaching and
Learning: Practices, Core Ideas, and
Crosscutting Concepts*

The Cincinnati Conference Committee has planned the conference around these three strands, enabling you to focus on a specific area of interest or need.

Bridging the Three Dimensions of Science Teaching and Learning: Practices, Core Ideas, and Crosscutting Concepts

Most states are either using an authentic, state-developed Three-Dimensional Learning Framework or they have implemented the NGSS to guide instruction that reflects local expectations. It is essential that teachers have opportunities to develop their ability to promote student learning. In this strand, participants will strengthen their capacity with the fundamental understandings of science (disciplinary core ideas), the “doing” of science (science and engineering practices), and the multidisciplinary themes (crosscutting concepts), for genuine and effective practice for all learners.

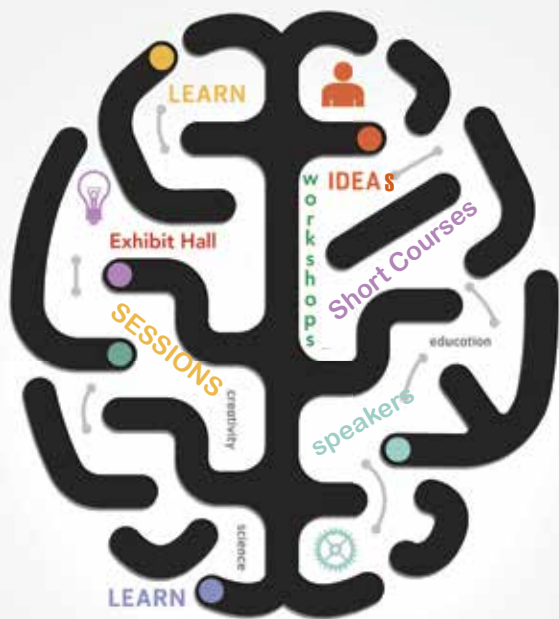
Constructing Bridges: Building Lifelong Appreciation and Passion for Science

Educators must be able to help students transcend instructional experiences as they develop the habits of science they will carry through life. The application of science pedagogy can introduce learners to the broad concepts and myriad connections to the real world around them. In this strand, participants will explore the varying depths of science available to all—no matter where their river flows.

Building Strong Bridges: Reinforcing the Connection Between Science and Literacy

High-performing schools often model transdisciplinary learning to help students make connections and deepen understanding in science and other content areas. In light of recent trends as computer science and technology standards are formed and expected to be infused into traditional science classes, offering STEM-focused challenges to bridge literacy skills across disciplines allows teachers to address diverse learners’ needs. In this strand, participants will delve into examples from practitioners reaching across traditional boundaries to illuminate three-dimensional science learning.

Need help navigating?



Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join other first-time attendees for an interactive exploration through the conference program, the conference app, and NSTA’s social media. By the end of the session, you will know just how to get the most from your conference experience in addition to building new networks with science colleagues.



First-Timer Attendee Session ● Thursday, November 14, 8:00–9:00 AM
Junior Ballroom C/D, Duke Energy Convention Center

NSTA Partnership School Program



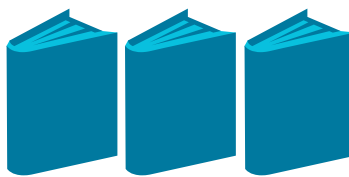
Each Partner School receives these benefits:

- ✓ **NSTA membership** for all teachers in the school building
- ✓ **One free conference registration** for a teacher/administrator to a STEM Forum or an NSTA Conference
- ✓ **Recognition** as an NSTA Partner School
- ✓ **One print journal** for the school building and e-journals for every teacher/member in the school
- ✓ **One hard copy of NSTA Reports** (newspaper) with e-Reports for every teacher/member in the school
- ✓ **Access to Learning Center Forums**, including collections of NGSS and STEM resources differentiated by grades
- ✓ **An initial one-on-one conversation** with NSTA to determine which products and services can best support school-wide professional learning goals
- ✓ **Participation in three virtual conferences** per year, exploring critical topics for STEM and NGSS integration
- ✓ **Access** to a national NGSS and STEM listserv and 16 other listservs

In addition, each teacher gets discounts on



NSTA conferences and workshops



NSTA Press books



Enhanced e-books



National
Science
Teaching
Association

Admission to NSTA short courses is by ticket only. Tickets, if still available, can be purchased at NSTA Attendee Services. See Conference App or Cincinnati session browser for complete descriptions.

Reimagining Three-Dimensional Science Assessments: What Does It Look Like to Monitor Student Progress in the Era of New Standards? (SC-1)

Level: K–12

Date/Time: Thursday, November 14, 10:30 AM–4:40 PM

Location: 212, Convention Center

Ticket Price: \$44

In this short course, participants will explore the key features of assessments designed to elicit three-dimensional performances with an emphasis on fairly and equitably supporting diverse learners. Using research-based tools and processes, we will dive into examples of high-quality assessments and examine annotated examples of assessments. Walk away with a deeper understanding of the NGSS, what three-dimensional assessments “look like,” and concrete short- and long-term strategies you can use to transition your existing assessments. Bring materials to take notes. For more information, visit Achieve.org. Expect a 30-minute break for lunch on own.

Creepy, Crawly Fun: Investigating the NGSS with Insects (SC-2)

Level: Grades K–4

Date/Time: Friday, November 15, 8:00–11:00 AM

Location: 212, Convention Center

Ticket Price: \$49

Insects are amazing to foster inquiry and spur investigations in the classroom. Come investigate complete 5Es lessons that use insects as learning tools! In this hands-on/minds-on short course, participants will explore complete 5Es lessons that meet NGSS performance expectations for various grades K–4. Many of the lessons can be modified to fit different grade levels. With insects living practically everywhere, they have been called the most dominant group of animals on Earth. Yet, despite the complexity and evolutionary success of insects, public understanding and appreciation of insects and other invertebrates remains limited and views of insects can often be simplified into “beautiful” or “bothersome.” To address this lack of understanding and appreciation for insects and



SC-2: *Creepy, Crawly Fun: Investigating the NGSS with Insects*

their relatives, we have worked to develop a plethora of 5Es lessons to integrate the study of insects into the elementary science classroom. Learn how to bring STEM to life with the wonders of a variety of species of insects! Find out how to set up a classroom enclosure for insects, how to acquire native species like termites and terrestrial isopods and care for them, and explore scientific inquiry activities you and your students can perform! Bring your laptop/tablet.

Patterns and Trends: Observe and Explore Bird Populations with Citizen Science (SC-3)

Level: Grades 6–12

Date/Time: Friday, November 15, 12:30–3:30 PM

Location: 212, Convention Center

Ticket Price: \$69

Join us for this short course that will get you outside. Experience firsthand the fun and ease of participating in eBird, the largest biodiversity-related citizen science project in the world, by going on a bird walk outside. Afterward, see demonstrations of the online tools and models eBird provides to engage students in graphing, mapping, and analyzing data to understand human impacts on bird populations. Leave with free curricula, a bird feeder, a new pair of Celestron binoculars, and the confidence to implement these teaching strategies. Be sure to dress for the weather as we will be outside for approximately an hour.



GREAT MINDS

Great Minds®, the nonprofit behind *Eureka Math*®/EngageNY Math, now offers *PhD Science*™ to support three-dimensional science teaching and learning.

- ✓ Aligned to NGSS
- ✓ Approved for adoption
- ✓ Available to pilot

Join us at Booth #305 for a hands-on workshop

greatminds.org/science

PhD SCIENCE™

SEE US AT
BOOTH #305

Inspiring students to wonder about the world and **empowering** them to make sense of it.

Harnessing the Wind: Energy Transfer and Transformation

Nov. 15 | 12:30 PM–1:30 PM | Duke Energy Convention Center, 262

In this hands-on workshop, you'll build a windmill and observe energy transfer (CC.5), create an anchor model (SEP.2) to record how windmills work (PS3.B), then develop a driving question board (SEP.1) to guide learning.

Help us with your feedback...and get a chance for a free Apple iPad mini 5

We're giving you one more reason to evaluate conference sessions.

When you evaluate a session, you get entered into a drawing for a chance to win an Apple iPad mini 5 Wi-Fi tablet *courtesy of the NSTA Conference Department*.

To evaluate a session using our online conference browser, click on **Attendee Info** tab and navigate to **Attendee Service Center Login** then log in with your e-mail address and password. Once logged in, select the **Session Evaluations** tab. Find the session that you have attended, then click the **Start** button. Follow the step-by-step process.

Your feedback helps us in creating the best conference experience for you and other attendees.

- **WE'RE GIVING AWAY an APPLE IPAD MINI 5 WI-FI TABLET**



• **CONFERENCE APP**



www.nsta.org/conferenceapp

Three Dimensions of the Next Generation Science Standards (NGSS)

Science and Engineering Practices	Crosscutting Concepts
SEP1 Asking Questions and Defining Problems SEP2 Developing and Using Models SEP3 Planning and Carrying Out Investigations SEP4 Analyzing and Interpreting Data SEP5 Using Mathematics and Computational Thinking SEP6 Constructing Explanations and Designing Solutions SEP7 Engaging in Argument from Evidence SEP8 Obtaining, Evaluating, and Communicating Information	CCC1 Patterns CCC2 Cause and Effect: Mechanism and Explanation CCC3 Scale, Proportion, and Quantity CCC4 Systems and System Models CCC5 Energy and Matter: Flows, Cycles, and Conservation CCC6 Structure and Function CCC7 Stability and Change

Disciplinary Core Ideas

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and the Application of Science
PS1: Matter and Its Interactions PS1.A: Structure and Properties of Matter PS1.B: Chemical Reactions PS1.C: Nuclear Processes PS2: Motion and Stability: Forces and Interactions PS2.A: Forces and Motion PS2.B: Types of Interactions PS2.C: Stability and Instability in Physical Systems PS3: Energy PS3.A: Definitions of Energy PS3.B: Conservation of Energy and Energy Transfer PS3.C: Relationship Between Energy and Forces PS3.D: Energy in Chemical Processes and Everyday Life PS4: Waves and Their Applications in Technologies for Information Transfer PS4.A: Wave Properties PS4.B: Electromagnetic Radiation PS4.C: Information Technologies and Instrumentation	LS1: From Molecules to Organisms: Structures and Processes LS1.A: Structure and Function LS1.B: Growth and Development of Organisms LS1.C: Organization for Matter and Energy Flow in Organisms LS1.D: Information Processing LS2: Ecosystems: Interactions, Energy, and Dynamics LS2.A: Interdependent Relationships in Ecosystems LS2.B: Cycles of Matter and Energy Transfer in Ecosystems LS2.C: Ecosystem Dynamics, Functioning, and Resilience LS2.D: Social Interactions and Group Behavior LS3: Heredity: Inheritance and Variation of Traits LS3.A: Inheritance of Traits LS3.B: Variation of Traits LS4: Biological Evolution: Unity and Diversity LS4.A: Evidence of Common Ancestry and Diversity LS4.B: Natural Selection LS4.C: Adaptation LS4.D: Biodiversity and Humans	ESS1: Earth's Place in the Universe ESS1.A: The Universe and Its Stars ESS1.B: Earth and the Solar System ESS1.C: The History of Planet Earth ESS2: Earth's Systems ESS2.A: Earth Materials and Systems ESS2.B: Plate Tectonics and Large-Scale System Interactions ESS2.C: The Roles of Water in Earth's Surface Processes ESS2.D: Weather and Climate ESS2.E: Biogeology ESS3: Earth and Human Activity ESS3.A: Natural Resources ESS3.B: Natural Hazards ESS3.C: Human Impacts on Earth Systems ESS3.D: Global Climate Change	ETS1: Engineering Design ETS1.A: Defining and Delimiting an Engineering Problem ETS1.B: Developing Possible Solutions ETS1.C: Optimizing the Design Solution ETS2: Links Among Engineering, Technology, Science, and Society ETS2.A: Interdependence of Science, Engineering, and Technology ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World

Visit the NSTA STORE

**FREE
Shipping**
for on-site Book
Purchases!



Offering the latest resources for science teachers, including new releases and bestsellers!

- Fun NSTA-branded gear—unique hats, shirts, mugs, and more
- Meet your favorite NSTA Press authors
- Ask about our NSTA gift cards—great gift ideas!

Download the conference app or follow #NSTA19 for special giveaways, contests, and more throughout the conference!

Visit www.nsta.org/store to make a purchase today, or call 800-277-5300.

STORE HOURS

Wednesday, November 13	4:30–7:00 PM
Thursday, November 14	7:30 AM–5:30 PM
Friday, November 15	7:30 AM–4:30 PM
Saturday, November 16	8:00 AM–12 Noon



**National
Science
Teaching
Association**

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Hall A Convention Center			NSTA Exhibits! 11:00 AM–5:00 PM
200 Convention Center			Exhibitor Workshop Modern Biology Is Revolutionizing Human Lives! Are Your Students Prepared? (Sponsor: Bio-Rad Laboratories)
201 Convention Center	Exhibitor Workshop IQWST: Literacy Strategies for the Middle School Classroom (Sponsor: Activate Learning)	Exhibitor Workshop Active Physics: Project-Based Learning for Content and Creativity (Sponsor: Activate Learning)	Exhibitor Workshop Reading, Writing, Talking, and DOING Science: Literacy Strategies in the Elementary Classroom (Sponsor: Activate Learning)
202 Convention Center	Eureka! Science Trade Books: Good as Gold!		
203/204 Convention Center	Extending Science Education to Girls in Rural Populations		
205 Convention Center		Exhibitor Workshop Using Maggots, Flies, and Flesh to Solve a Mystery! (Sponsor: Texas Instruments)	Exhibitor Workshop CleverCrazes.com: Always FREE, Always FUN, STEAM-Based, K–8 Academic Enrichment (Sponsor: Clever Crazes for Kids)
207/208 Convention Center		Exhibitor Workshop Beyond CER Labels: Supporting Authentic Scientific Argumentation in the Classroom (Sponsor: Amplify)	Exhibitor Workshop Lead with Phenomena and the Three Dimensions Will Follow (Sponsor: Amplify)
212 Convention Center		Reimagining Three-Dimensional Science Assessments: What Does It Look Like to Monitor Student Progress in the Era of New Standards? (SC-1) By Ticket Only; \$44 10:30 AM–4:40 PM	
230/231 Convention Center		Exhibitor Workshop Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher (Sponsor: Carolina Biological Supply Co.)	Exhibitor Workshop Phenomenal Classroom Critters (Sponsor: Carolina Biological Supply Co.)

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
232 Convention Center	Exhibitor Workshop pH Scale (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Distilling Aromatic Hydrocarbons (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Chemical Formula and Amino Acids (Sponsor: Lab-Aids, Inc.)
233 Convention Center	Exhibitor Workshop Introducing Your Students to Gene Editing with CRISPR (Sponsor: Edvotek Inc.)	Exhibitor Workshop Left at the Scene of the Crime! (Sponsor: Edvotek Inc.)	Exhibitor Workshop Transform Your Class into a Neuroscience Laboratory (Sponsor: Edvotek Inc.)
236 Convention Center	Exhibitor Workshop 5 E'sy Ways to Investigate Proteins and Enzyme Action (Sponsor: 3D Molecular Designs)	Exhibitor Workshop Dynamic DNA— One Model to Teach It All (Sponsor: 3D Molecular Designs)	
237/238 Convention Center			
250 Convention Center	A Teacher's Toolbox for Lab Safety		
251 Convention Center	Infusing Computational Thinking Across the STEM Curriculum		
252 Convention Center	Model Stellar Evolution and Supernovas Using NASA Images, Data, and STEM Analysis Tools		
260/261 Convention Center			3D Pens for K–8 with 3Doodler EDU (Sponsor: 3Doodler)
262 Convention Center		Exhibitor Workshop Teaching Earth and Space Science with Authentic Data for Elementary Grades (Sponsor: WGBH Education)	

Earth & Space Science

Engineering & Tech

Life Science

Physical Science

Informal Science

General Science

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
263 Convention Center	Exhibitor Workshop Phenomena and Energy in the Web of Life <i>(Sponsor: ScienceFLEX & MakerSpace / School Specialty Science)</i>	Exhibitor Workshop Developing and Using Models <i>(Sponsor: ScienceFLEX & MakerSpace / School Specialty Science)</i>	Exhibitor Workshop FOSS: 10 Minutes to Improving Science Achievement <i>(Sponsor: Delta Education / School Specialty Science–FOSS)</i>
264 Convention Center	Innovative Life Science Activities for Preservice and Inservice Elementary Teachers		
Grand Ballroom A Convention Center			
Grand Ballroom B Convention Center		Keynote Presentation 9:15–10:30 AM Schools Saving Species? Speaker: Luke Dollar <i>Sponsor: National Geographic Learning Cengage</i>	
Junior Ballroom A Convention Center	NSTA Press Session: Argument-Driven Inquiry in Biology, Chemistry, and Physics: Lab Investigations for Grades 9–12		
Junior Ballroom B Convention Center		Exhibitor Workshop Blended Labs Prepare Students for the AP® Chemistry Exam <i>(Sponsor: Flinn Scientific, Inc.)</i>	
Junior Ballroom C/D Convention Center	Is This Your First NSTA Conference? First-Timer Conference Attendees’ Orientation		

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
200 Convention Center		Exhibitor Workshop Learn to Infuse NGSS Science and Engineering Practices with an Engaging Activity (Sponsor: Bio-Rad Laboratories)	Exhibitor Workshop Think Like an Engineer in Your Biology Class (Sponsor: Bio-Rad Laboratories)
201 Convention Center	Exhibitor Workshop Systems Thinking Applied to Planet Earth's Greatest Challenges (Sponsor: Activate Learning)	Exhibitor Workshop IQWST: Using Anchoring Phenomena and Driving Question Boards to Spark Student Questioning (Sponsor: Activate Learning)	Exhibitor Workshop Project-Based Inquiry Science™ (PBIScience): Creating “Coherence and Science Storylines” for Middle School (Sponsor: Activate Learning)
202 Convention Center		NSELA-Sponsored Session: Developing Science Practices with Citizen Science	CSSS-Sponsored Session: Equitable 3-D Learning in Science for All
203/204 Convention Center	To Bee or Not to Bee: Students Track Pollinators in Their School and Community as They Become Citizen Scientists	STEM, Creativity, and Innovation—Proven Pathway to a Well-Rounded Education	NSTA-WIDA Session: Seamless Integration of 3-D Science and Language Using Phenomena to Drive Instruction and Facilitate Science Discourse
205 Convention Center	Exhibitor Workshop STEMulating the Heart with Code! (Sponsor: Texas Instruments)	Exhibitor Workshop STEM Challenge: Keeping Students Engaged with Problem Solving (Sponsor: AEOP)	
207/208 Convention Center	Exhibitor Workshop Snails, Robots, and Biomimicry: Phenomena and 3-D Instruction for Grades K–5 (Sponsor: Amplify)		
230/231 Convention Center	Exhibitor Workshop Criteria and Constraints: Raising the Bar for Rigor Grades 3–5 (Sponsor: Carolina Biological Supply Co.)	Exhibitor Workshop Next Generation Dissection (Sponsor: Carolina Biological Supply Co.)	
232 Convention Center	Exhibitor Workshop NGSS—Ecology: Introduction of a New Species (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop NGSS—Energy: Are These Bulbs Heating Up Our Energy Bill? (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop NGSS—Weather and Climate: Atmosphere, Climate, and Global Warming (Sponsor: Lab-Aids, Inc.)
233 Convention Center	Exhibitor Workshop Exploring STEAM with Transformation (Sponsor: Edvotek Inc.)	Exhibitor Workshop Cancer Investigators: Medical Diagnostics in Your Classroom (Sponsor: Edvotek Inc.)	Exhibitor Workshop Sweet Science: Exploring Complex Mixtures with Biotechnology (Sponsor: Edvotek Inc.)

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
236 Convention Center	Exhibitor Workshop Get a Move On! Modeling Molecular Transport Across the Cell Membrane (Sponsor: MSOE Center for BioMolecular Modeling)		Exhibitor Workshop Connecting CRISPR Biotechnology to What You Already Teach (Sponsor: MSOE Center for BioMolecular Modeling)
237/238 Convention Center	Mathematics and the Beauty of Analyzing and Interpreting Physics and Rocket Team Data	Dumpster Dive with STEM	Chemistry Can Be Fun with the ACS ChemClub Program
250 Convention Center	How to Locate, Map, and Process an Outdoor Crime Scene	Ethics, the Environment, and Ourselves: An Urgent and Exciting Relation Shown Through the Aesthetic Realism Teaching Method!	
251 Convention Center	Understanding the Hubble Redshift	Analyzing Hazards and Risks in High School Chemistry Labs	Exploring Tiered Grouping to Facilitate Differentiation Within a Guided Inquiry Framework
252 Convention Center	Teaching the Engineering Design Process Through Urban Gardening	Data in the Classroom: Use NOAA Resources to Bring Scientific Data to Your Classroom	NSTA/ASTE Present 2020 Standards for Science Teacher Preparation
260/261 Convention Center		Exhibitor Workshop "It's Too Hard to Explain!" Develop Models to Construct Explanations (Sponsor: Cereal City Science)	
262 Convention Center	Exhibitor Workshop Analyzing and Interpreting Data Using TCI's <i>Bring Science Alive!</i> (Sponsor: TCI)	Exhibitor Workshop Using a Variety of Methods to Assess for the Three Dimensions (Sponsor: TCI)	
263 Convention Center	Exhibitor Workshop Making Sense of Phenomena with FOSS (Sponsor: Delta Education / School Specialty Science–FOSS)	FOSS Wave Properties and Information Technologies (Sponsor: Delta Education / School Specialty Science–FOSS)	
264 Convention Center		From Harmony to Humpbacks	Differentiation Strategies for Grades 5–12 Science

Earth & Space Science

Engineering & Tech

Life Science

Physical Science

Informal Science

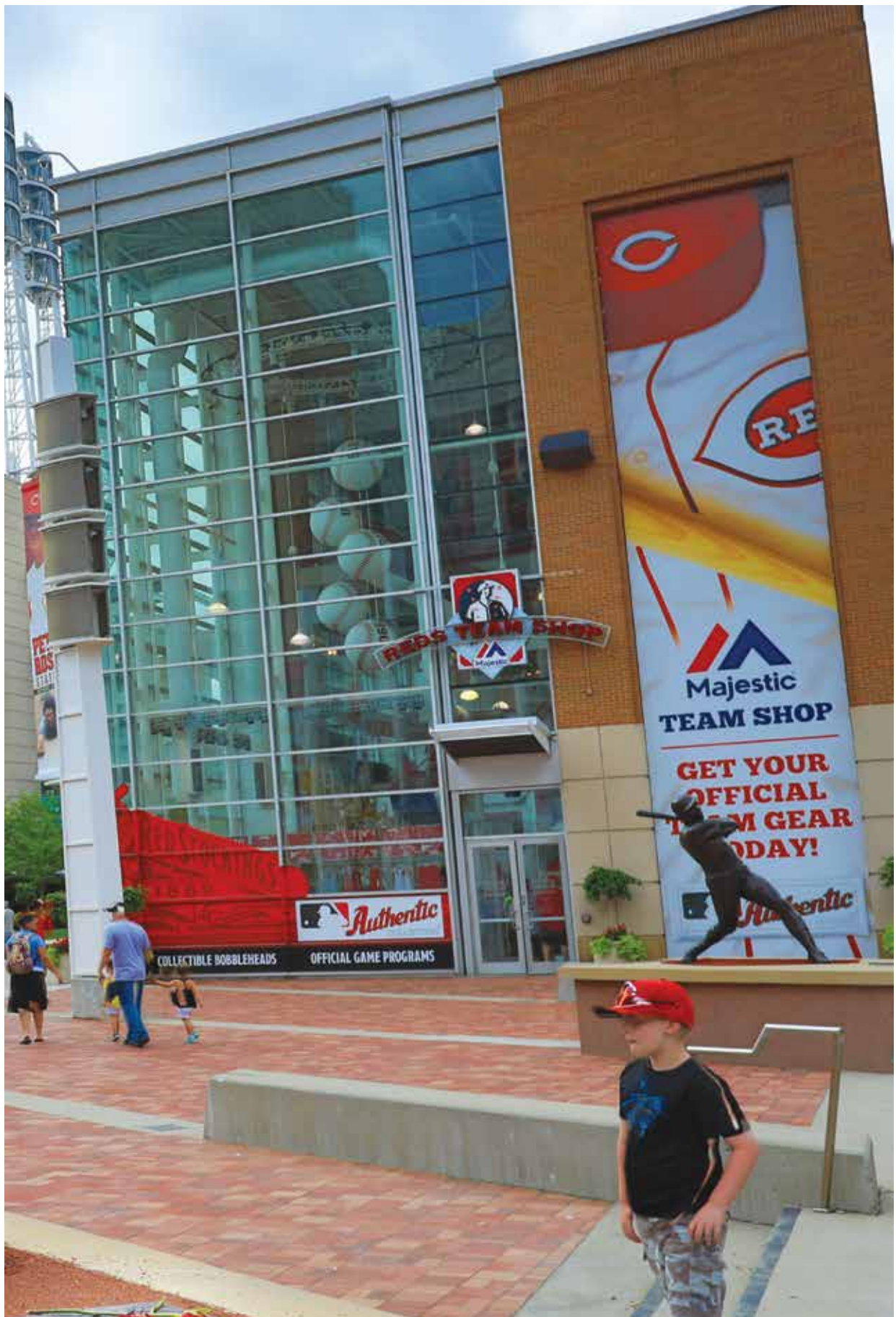
General Science

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
Grand Ballroom A Convention Center		Featured Presentation New Era, Beyond Science and Literacy Integration Speaker: Jacqueline Barber (LITERACY strand)	Featured Student Panel: Stewards of the Planet Moderator: Luke Dollar
Junior Ballroom A Convention Center	NSTA Press Session: <i>Uncovering Student Ideas in Science and K–12 Language Literacy</i>	NSTA Press Session: <i>Solar Science</i> Provides Three-Dimensional Learning Experiences About the Sun, Earth, and Moon	NSTA Press Session: <i>Eureka! K–2 and Grades 3–5 Science Activities and Stories</i>
Junior Ballroom B Convention Center	Exhibitor Workshop A New Twist on Old Chemistry Labs (Sponsor: Flinn Scientific, Inc.)		Exhibitor Workshop Flinn Favorite Biology Activities and Games (Sponsor: Flinn Scientific, Inc.)

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Findlays Hyatt			
Regency Ballroom A Hyatt	NMLSTA-Sponsored Session: Behave Like an Enzyme, Act Like a Plant		
Regency Ballroom C Hyatt	NGSS@NSTA Forum Session: What Does It Look Like? Assessing 3-D Learning in the Classroom: How to Navigate Opportunities and Pitfalls		
Regency Ballroom E Hyatt	Crossing Over: Incorporating Energy and Science in Language Arts		
Regency Ballroom F Hyatt	Data Collection, Analysis, and Reporting in a Digital Laboratory (3D strand)		
Regency Ballroom G Hyatt			
Buckeye A Hyatt	Power Saturday: Pumping Up the STEM (PASSION strand)		
Buckeye B Hyatt	Super STEM iPad Apps and Trade Books for Real-World Projects		
Bluegrass A Hyatt	Strategies for Connecting Rocks and Fossils to Changes in Landscape		

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
Findlays Hyatt	Cheap STEM for the Classroom	Taking on Big Science Challenges Across Districts: How a District Science Network Can Build Capacity and Advance Equity	STEM Goes Outside!
Regency Ballroom A Hyatt	Let's Race: Drone Racing at the Middle School	Injecting Viruses into the Curriculum	Sweet Math: How Much Corn Did I Drink?
Regency Ballroom C Hyatt	NGSS@NSTA Forum Session: Designing and Using Equitable Three-Dimensional Formative Assessments to Support Meaningful NGSS Investigations	Pedagogy for Conceptual Retention: Modeling Instruction in Science (3D strand) 2:00–3:30 PM	
Regency Ballroom E Hyatt	Linking Science and Literacy for Improved Student Outcomes	STEM Selected Tradebooks Enrich Minds	Inquiry in Action: Investigating Matter K–5
Regency Ballroom F Hyatt	Teaching Soils in Grades 3–6 Is Fun and Educational	CESI-Sponsored Session: Integrating Science for Young Children with an Outdoor Focus	Let's Get Wet: Wind, Water, and Weather for Grades PreK–3
Regency Ballroom G Hyatt	The Nature of Teaching K–5 Natural Resources Curricula		Tools to Make Three-Dimensional Learning Explicit for Students and Teachers (3D strand)
Buckeye A Hyatt	Modeling Plate Tectonics: Integrating Science, Engineering, and Technical Writing Through PBL (LITERACY strand)	Earth and Space Digital Media Resources with Accessibility Supports (PASSION strand)	Forensic Tire and Foot Impression Evidence (PASSION strand)
Buckeye B Hyatt	The Story of NGSS Test Writing (3D strand)	Using NGSS Resources to “Flip a Lesson” and Improve Three-Dimensionality (3D strand)	Bringing STEAM and Literacy to the Periodic Table (LITERACY strand)
Bluegrass A Hyatt		Enabling ALL Grades 3–8 Students to Recognize the Impact of STEM and the Essential Integration of All STEM Disciplines	

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------



LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Hall A Convention Center		NSTA Exhibits! 9:00 AM–4:00 PM	
200 Convention Center	Exhibitor Workshop Investigate Photosynthesis and Cellular Respiration with Algae Beads for Gen Bio (Sponsor: Bio-Rad Laboratories)	Exhibitor Workshop Are Increased Incidences of Infection the Result of Climate Change? (Sponsor: Bio-Rad Laboratories)	Exhibitor Workshop The Opioid Epidemic: Exploring the Genetic Associations of Opioid Abuse (Sponsor: Bio-Rad Laboratories)
201 Convention Center	Exhibitor Workshop Photosynthesis and Respiration: Light and Dark Reactions Quantified with Technology (Sponsor: PASCO)	Exhibitor Workshop Investigating Enzyme Activity: Finding the Optimal Conditions (Sponsor: PASCO)	Exhibitor Workshop Speed and Velocity: Lessons with Motion Graphs (Sponsor: PASCO)
202 Convention Center	No Matter What the Project Size, Developing Stewardship Opportunities Will Bring Amazing Results!	Grading with Purpose: My Journey to Standards-Based Grading 9:30–10:00 AM	Meteorology 101: Weather for Teachers
203/204 Convention Center	ASEE Session: Biology Meets Engineering	ASEE Session: A Concrete Decision	ASEE Session: Puddlestoppers, Savin' Them Shoes
205 Convention Center	Exhibitor Workshop Using the Chemistry Lab for STEM Exploration Before Explaining (Sponsor: Pearson K–12 Learning LLC)	Exhibitor Workshop Solving Crimes with Science: Forensics for Your Classroom (Sponsor: AEOP)	Exhibitor Workshop CleverCrazes.com: Always FREE, Always FUN, STEAM-Based, K–8 Academic Enrichment (Sponsor: Clever Crazes for Kids)
206 Convention Center	Exhibitor Workshop Novel Icefish Genes, Adaptation, and Human Health with HHMI BioInteractive (Sponsor: HHMI BioInteractive)	Exhibitor Workshop Biology and Geology: Co-Evolving Over Time with HHMI BioInteractive (Sponsor: HHMI BioInteractive)	Exhibitor Workshop Explore Dog Genomics with HHMI BioInteractive (Sponsor: HHMI BioInteractive)
207/208 Convention Center		Exhibitor Workshop Access and Rigor: Three-Dimensional Science for English Language Learners (Sponsor: Amplify)	Exhibitor Workshop Embedded and Immersive Engineering (Sponsor: Amplify)
211 Convention Center	Thoughtful Integration of AI and Machine Learning	Girls in Charge: The KGSC Teen Board Experience	KGSC: Create the Tipping Point for Gender Equity in STEM

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
212 Convention Center	Creepy, Crawly Fun: Investigating the NGSS with Insects (SC-2) By Ticket Only; \$49 8:00–11:00 AM		
230/231 Convention Center	Exhibitor Workshop Talking Allowed! Using Science Discourse for Equity in Grades 6–8 (Sponsor: Carolina Biological Supply Co.)	Exhibitor Workshop Introduction to Wisconsin Fast Plants® (Sponsor: Carolina Biological Supply Co.)	Exhibitor Workshop Increasing the Sophistication of Student Thinking: Need for K–5 Learning Progressions (Sponsor: Carolina Biological Supply Co.)
232 Convention Center	Exhibitor Workshop NGSS—Evolution: Embryo-OH! (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop NGSS—Chemical Reactions: Developing a Prototype (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop NGSS—Land, Water, and Human Interactions: Cutting Canyons and Building Deltas (Sponsor: Lab-Aids, Inc.)
233 Convention Center	Exhibitor Workshop Quick and Easy Experiments Using the Latest Technology (Sponsor: Vernier Software & Technology)	Exhibitor Workshop Common Biology Experiments Using the Latest Technology (Sponsor: Vernier Software & Technology)	Exhibitor Workshop Common Middle School Experiments Using the Latest Technology (Sponsor: Vernier Software & Technology)
236 Convention Center	Exhibitor Workshop Genes in Space: Genetics on the International Space Station, Free Loaner Equipment, Curriculum, and More! (Sponsor: miniPCR bio)	Exhibitor Workshop P51 Glow Labs: Investigate DNA and Other Macromolecules Through Fluorescence (Sponsor: miniPCR bio)	Exhibitor Workshop Are You a Night Owl? A Morning Lark? The Answer May Be in Your Genes (Sponsor: miniPCR bio)
237/238 Convention Center	Teach Evolution with the World's Most Extravagant Birds		Conceptual Dihybrid Cross Demonstration for Linked and Unlinked Genes
250 Convention Center	Advancing Science Literacy with Lesson Plans That Meet the CCSS and NGSS		Science Current Events Journals: Real Science and Media Literacy
251 Convention Center		Literacy, Content Reading, and the Promotion of Metacognitive Learning Strategies in STEM	CCSS-Sponsored Session: Cross-State Collaboration: Designing Phenomena-Driven 3-D Classroom Formative Assessments to Support Meaningful Assessment Practices
252 Convention Center	Come Along with Scientists in the Field	Making Science Learning Lifelong, Life-wide, and Life-deep: Incorporating Out-of-School (Informal) STEM Learning Experiences in the Classroom	360 Degree Videos in the Learning Cycle

Earth & Space Science

Engineering & Tech

Life Science

Physical Science

Informal Science

General Science

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
260/261 Convention Center	Exhibitor Workshop Who Is Baby Whale's Father? DNA Fingerprinting Solves the Mystery! (Sponsor: MiniOne Systems)	Exhibitor Workshop Show Me the Moo-ney! Determine the Genetics of a CASH-Cow (Sponsor: MiniOne Systems)	Exhibitor Workshop To Taste or Not to Taste! PTC Genotype Determination by Electrophoresis (Sponsor: MiniOne Systems)
262 Convention Center	Exhibitor Workshop Give a Hand: Teaching Engineering Design (Sponsor: TCI)	Exhibitor Workshop Modeling the Earth, Sun, and Other Stars with <i>Bring Science Alive!</i> (Sponsor: TCI)	Exhibitor Workshop Teaching Earth and Space Science with Authentic Data for Middle School and High School (Sponsor: WGBH Education)
263 Convention Center	Exhibitor Workshop How to Use Phenomena to Make Gains in Inquiry (Sponsor: STEMscopes)	Exhibitor Workshop Let's DIVE-in to Engineering and the Engineering Design Process (Sponsor: STEMscopes)	Exhibitor Workshop Using Argumentation to Discuss Phenomena (Sponsor: STEMscopes)
264 Convention Center	Sweating Alcohol in 3-D!	Love Acronyms? Then RSVP to This Session ASAP!	Getting Over Graphs in the Science Classroom
Grand Ballroom A Convention Center		Featured Presentation Satellites Over Seals: Empowering Lifelong Learning Through Citizen Science in Antarctica Speaker: Michelle LaRue (PASSION strand)	
Grand Ballroom B Convention Center	NESTA Session: Introducing Solar Cell and Battery Fabrication in Classrooms	NESTA/OESTA: Take a High Seas Adventure Aboard the National Oceanic and Atmospheric Administration's <i>Oregon II</i> in Search of Sharks	
Junior Ballroom A Convention Center	NSTA Press Session: Developing and Using 3-D Formative Assessment Probes	NSTA Press Session: <i>Picture-Perfect Science Lessons,</i> <i>Using Children's Books to</i> <i>Guide Inquiry K–5</i>	NSTA Press Session: It's Still Debatable... and Elementary! Using Socioscientific Issues to Develop Scientific Literacy, K–5
Junior Ballroom B Convention Center		Exhibitor Workshop Engaging Demos and Labs for New Chemistry Teachers (Sponsor: Flinn Scientific, Inc.)	

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Junior Ballroom C Convention Center	Equilibrium: The Key to Student Success	ASTE-Sponsored Session: Fitting Together Science and Computing, Lessons to Use Today in Secondary Science Classrooms	How to Implement STEM and NGSS into Your Classroom Through the Use of NSTA Competitions
Junior Ballroom D Convention Center	ACS High School Session One: Relating Structure and Properties: Exploring the Nature and Properties of Ionic and Covalent Compounds—Composition, State, and Conductivity	ACS High School Session Two: Relating Structure and Properties: Constructing Science Ideas About Ionic Bond Strength—Solubility and Melting Point	ACS High School Session Three: Interparticle Forces in Covalent Compounds—Melting Point, Viscosity, and Vapor Pressure

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
200 Convention Center		Exhibitor Workshop It's in Their DNA! Teach Personalized Medicine with Students' Own DNA (Sponsor: Bio-Rad Laboratories)	Exhibitor Workshop Mushroom Ecology and Why It Matters for Biofuel Production (Sponsor: Bio-Rad Laboratories)
201 Convention Center	Exhibitor Workshop Crash Barrier: How to Design a STEM Engineering Challenge (Sponsor: PASCO)	Exhibitor Workshop Stoichiometry Made Easy: A Mole Story (Sponsor: PASCO)	Exhibitor Workshop Easy Titration: Breaking the Equivalence Curve (Sponsor: PASCO)
202 Convention Center	A Unique Ice Core Investigation That Integrates the Three Dimensions of NGSS and STEM	Promoting Classroom Discourse	
203/204 Convention Center	ASEE Session: Free Engineering Resources for K–12 Classrooms and Connections to Engineering Soft Skills	NSTA Press Session: Next Time You See a Bee	
205 Convention Center	Exhibitor Workshop Are You Moody? (Sponsor: Texas Instruments)	Exhibitor Workshop Zombie Apocalypse! (Sponsor: Texas Instruments)	Exhibitor Workshop Multisensory Learning: Building Body Systems in Clay (Sponsor: ANATOMY IN CLAY® Learning System)
206 Convention Center	Exhibitor Workshop Telling the Story of Emerging Infectious Diseases Using BioInteractive Resources (Sponsor: HHMI BioInteractive)	Exhibitor Workshop Seeking Causes for Environmental Change: Pathways to Data Literacy (Sponsor: HHMI BioInteractive)	Exhibitor Workshop Constructing Systems Models with HHMI BioInteractive: Connecting the Carbon Cycle (Sponsor: HHMI BioInteractive)
207/208 Convention Center	Exhibitor Workshop Light Waves and Skin Cancer: Phenomena and 3-D Instruction for Grades 6–8 (Sponsor: Amplify)		
211 Convention Center		The Best STEM Books for Kids: What Are They, How Are They Selected, How to Use Them!	
212 Convention Center	Patterns and Trends: Observe and Explore Bird Populations with Citizen Science (SC-3) By Ticket Only; \$69 12:30–3:30 PM		

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
230/231 Convention Center	Exhibitor Workshop Engineer Physical Science Excitement with a Carolina STEM Challenge® (Sponsor: Carolina Biological Supply Co.)	Exhibitor Workshop Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (Sponsor: Carolina Biological Supply Co.)	
232 Convention Center	Exhibitor Workshop What Is a Species? (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Cell Differentiation and Gene Expression (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Photosynthesis and Respiration Shuffle (Sponsor: Lab-Aids, Inc.)
233 Convention Center	Exhibitor Workshop Common Physics Experiments (Sponsor: Vernier Software & Technology)	Exhibitor Workshop Robots, Coding, and Science: A Complete STEM Experience (Sponsor: Vernier Software & Technology)	Exhibitor Workshop Common Chemistry Experiments Using the Latest Technology (Sponsor: Vernier Software & Technology)
236 Convention Center	Exhibitor Workshop Attract Students to Water Concepts with Magnetic Water Molecule Models (Sponsor: 3D Molecular Designs)	Exhibitor Workshop "Going with the Flow" of Genetic Information (Sponsor: MSOE Center for BioMolecular Modeling)	Exhibitor Workshop Touch a Nerve with Hands-On Modeling of Neuronal Communication (Sponsor: 3D Molecular Designs)
237/238 Convention Center	Phenomenal Soils	Strategies for Making the Next Generation Science Standards Beneficial in a Non-NGSS State	
250 Convention Center	Connecting Simulations to Real-World Examples		
251 Convention Center	NARST-Sponsored Session: Development of a Tool to Compare Student Socioscientific Reasoning of Environmental and Genetic Issues	NSELA-Sponsored Session: Meaningful Conversations for Science Leaders—Professional Development	
252 Convention Center	Freshwater Stewardship: Equip Your Student-Scientists with Cutting-Edge Resources from NOAA		
260/261 Convention Center		Exhibitor Workshop "It's Too Hard to Explain!" Develop Models to Construct Explanations (Sponsor: Cereal City Science)	

Earth & Space Science

Engineering & Tech

Life Science

Physical Science

Informal Science

General Science

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
262 Convention Center	Exhibitor Workshop Harnessing the Wind: Energy Transfer and Transformation (Sponsor: Great Minds)	Exhibitor Workshop Teaching Weather and Climate with Digital Media, Grades 6–12 (Sponsor: WGBH Education)	
263 Convention Center	Exhibitor Workshop Let's Improve Student Achievement Through STEM Teacher Actions and STEM Certification (Sponsor: National Institute for STEM Education)		
264 Convention Center	GMO, What Do You Know? A Breakout Game		
Grand Ballroom A Convention Center		Featured Presentation Science as a Fundamental Skill and Lifelong Experience— Workforce and Life Force Speaker: Stephen Pruitt (3D strand)	
Grand Ballroom B Convention Center	NESTA/OESTA Earth System Science Share-a-Thon (3D strand)	NESTA/OESTA: Rock, Mineral, and Fossil Raffle	
Junior Ballroom A Convention Center	NSTA Press Session: <i>Never Stop Wondering</i>	NSTA Press Session: Argument-Driven Inquiry in the Life, Physical, and Earth-Space Sciences: Lab Investigations for Grades 6–8	
Junior Ballroom B Convention Center	Exhibitor Workshop Blended Labs Prepare Students for the AP Biology Exam (Sponsor: Flinn Scientific, Inc.)		

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
Junior Ballroom C Convention Center	Makerspaces: Why, What, How	Makerspace Petting Zoo	
Junior Ballroom D Convention Center	ACS High School Session Four: Relating Structure and Properties: Demonstrating Understanding of Bond Strength and Interparticle Attractions	Digging into NGSS 3-D Instruction: Using Technologies as Meaningful Tools to Plant Literacy	
Exhibit Hall Entrance Convention Center		Meet the Presidents and Board/Council 2:45–3:30 PM	

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Findlays Hyatt	ACS Middle Level Session: Particles of a Liquid and Changes of State	ACS Middle Level Session: The Water Molecule and Dissolving	ACS Middle Level Session: Chemical Reactions— Breaking and Making Bonds
Regency Ballroom A Hyatt			
Regency Ballroom C Hyatt	Idea Starters: Using English Language Arts as a Bridge to Engineering Practices	Fairy Tale Forensics	Building Literacies: From STEM Books to the Beautiful Outdoors
Regency Ballroom E Hyatt	Birding Is Elementary	Phenomenon-Based Learning Using Digitized Museum Objects	Teaching Shapes and Kinds of Land and Bodies of Water Using Models and Images
Regency Ballroom F Hyatt		All Systems Go! Using a Systems Approach in Science Teaching and Learning (3D strand)	Integrating the Three Dimensions into Lessons and Units: A Research Discussion and Workshop with Model Strategies (3D strand)
Regency Ballroom G Hyatt	Say What? Getting Students to Learn and Use Scientific Vocabulary Words (LITERACY strand)	Making Detectives in Middle School: Using Ecology Mysteries to Explore Content and Integrate Writing Practices (LITERACY strand)	
Buckeye A Hyatt	The Magnetic Field Measurement Project: A Semester-Long Physics Project for Nonmajors (PASSION strand)		Using National Science Olympiad STEM Classroom Materials to Address NGSS Crosscutting Concepts and Content (PASSION strand)
Buckeye B Hyatt	NSTA Press Session: Reading, Writing, and Reasoning in the School Yard	Cross-Curricular Learning with a Science and Integrated STEM Focus: Optimizing Student Learning and Maximizing Efficiency of Instruction While Embracing All Aspects of STEM	
Bluegrass A Hyatt	Fossils, Rocks, and Soil...Oh My!	NSTA-WIDA Session: Equitable 3-D Science Education for Multilingual Learners, New Resources from the NSTA-WIDA Affiliation	NSTA Press Session: Second Edition Curriculum Topic Study (CTS), a Systematic Process for Informing Curricular and Instructional Decisions

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------

LOCATION	12:30–1:30 PM	2:00–3:00 PM	3:30–4:30 PM
Findlays Hyatt	ACS Middle Level Session: Chemical Reactions— Ocean Acidification		
Regency Ballroom A Hyatt			SECO Annual Meeting and Awards Recognition 4:00–5:30 PM
Regency Ballroom C Hyatt		NMLSTA-Sponsored Session: Science + Engineering + Math = Parachute STEM Activity	
Regency Ballroom E Hyatt	CESI-Sponsored Session: Active Formative Assessment	There Is More to Science than “Wow!”	
Regency Ballroom F Hyatt	Centering Around Science for K–3 Teachers (3D strand)		
Regency Ballroom G Hyatt	Differentiation in Science Class (PASSION strand)		
Buckeye A Hyatt	Forensic Soil/Sand Analysis Using Historical Case Studies/Podcasts (NGSS/Earth Science/History) (LITERACY strand)		
Buckeye B Hyatt	Strengthening Early Childhood (K–2) Science Teachers’ Capacities in a Qualitative Case Study	Second-Grade Maps in Two and Three Dimensions: An Inquiry Modeling Approach	
Bluegrass A Hyatt	Food Chains: Using Field Surveys That Give Real Results	EXENTHUNCO: What Is That?	

Earth & Space Science

Engineering & Tech

Life Science

Physical Science

Informal Science

General Science

JOIN US

9TH ANNUAL

STEM

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

Forum & Expo

HOSTED BY NSTA

Louisville, Kentucky

July 22–24, 2020

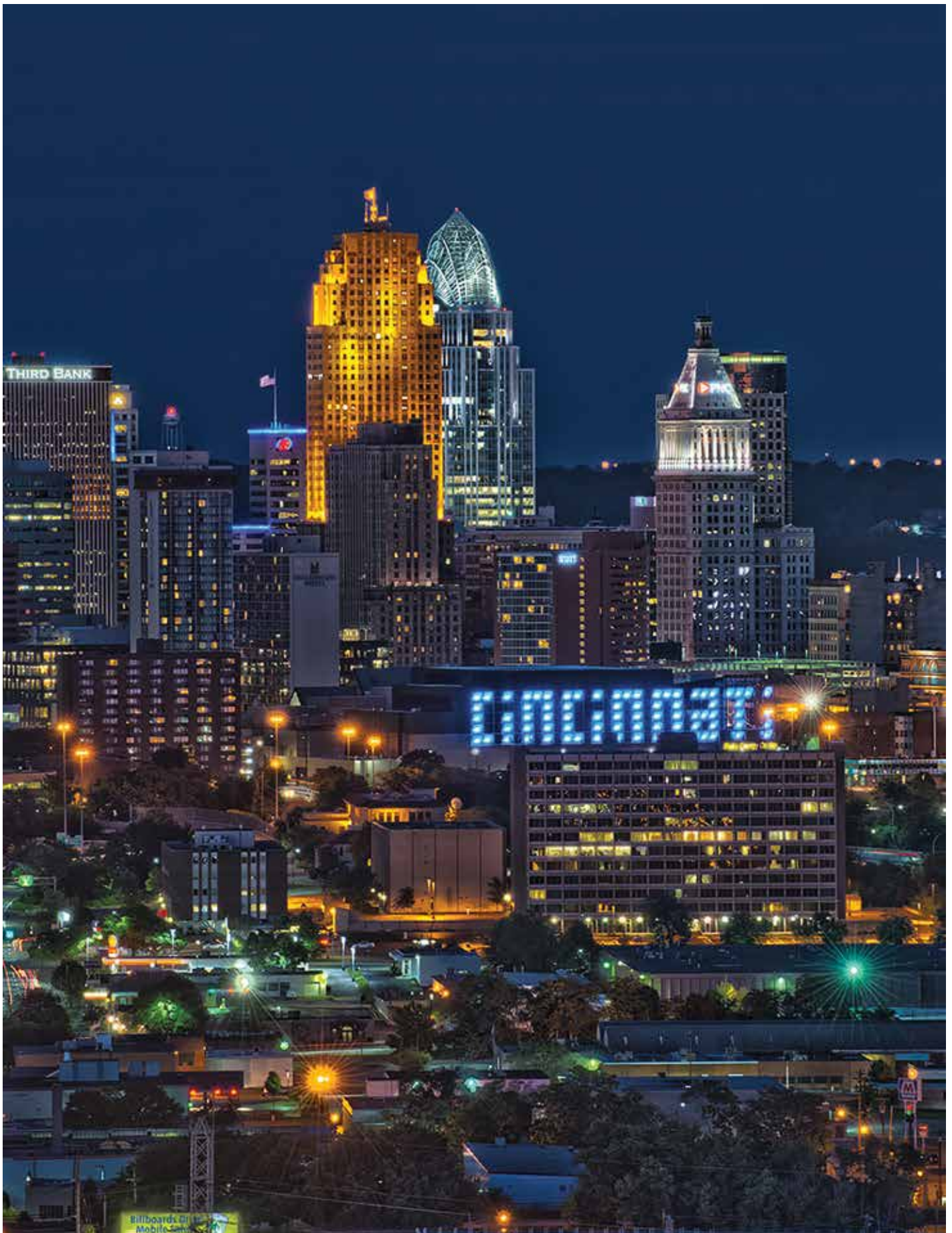
- Experience hands-on sessions that enhance your ongoing development and improve your STEM knowledge.
- Explore ways to foster integration of research-based methods into the STEM curriculum.
- Network with colleagues and hone your STEM leadership skills.
- Compare project- and research-based activities that tackle issues of real-world relevance.
- Discover the aspirations of students who share their interests in STEM opportunities and careers.
- Check out the hottest tools and resources for STEM educators.
- Get the keys to success in developing partnerships with informal education groups, business, industry, and governmental agencies.

This dynamic event brings together educators and organizations that are actively implementing STEM programs in their schools or districts.

Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

#STEMforum





—Photo courtesy of Duke Energy Convention Center

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Hall A Convention Center		NSTA Exhibits! 9:00 AM–12 Noon	
202 Convention Center	NESTA Shares: Bridging the Gap Between Science and Learning with Professional Development Opportunities from the American Meteorological Society	STEM Tuesday— Investigate and Celebrate Middle Grade STEM Books	The Paper-LESS Classroom: Alternative Methods for Teaching Science in a Technological Age
203/204 Convention Center	The Key to Success = Student Engagement: Strategies, Activities, and Resources Guaranteed to Increase Student Achievement	Bringing Earth and Space Phenomena-Based Learning into Your Classroom with Digital Media	
211 Convention Center	Coral Reefs, Fragile Wonders Under Threat: Bring Vibrant Environmental Stewardship Lessons to Your Students with Free NOAA Resources	The Lecture Is Dead: How to Use Flipped Learning and Inquiry in Your Classroom	Do You Need a New Science Lab? Win a Shell Science Lab Makeover (\$20,000 Value) for Your School
232 Convention Center	Exhibitor Workshop Using Climate Proxies to Learn About Earth's Climate History (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Prospecting for Mineral Ore (Sponsor: Lab-Aids, Inc.)	Exhibitor Workshop Calling All Carbons (Sponsor: Lab-Aids, Inc.)
236 Convention Center	Exhibitor Workshop A Microscopic to Molecular Perspective in Modeling Chromosomes (Sponsor: MSOE Center for BioMolecular Modeling)	Exhibitor Workshop Using Water Models to Uncover Misconceptions in Chemistry (Sponsor: 3D Molecular Designs)	
237/238 Convention Center		Engineering Design for Biology— Protein Folding	Middle School Magic: Choice, Song, and Play
250 Convention Center	Win the Grant Writing Game: Grant Writing Strategies for You and Your Chemistry Students	Using Historic Articles as Case Studies in Physics	
251 Convention Center	NSTA's Online Resources and Communities	Using NSTA as Your Online Textbook—for Professors!	NGSS@NSTA Forum Session: <i>The NSTA Atlas of the Three Dimensions</i>

Earth & Space Science	Engineering & Tech	Life Science	Physical Science	Informal Science	General Science
-----------------------	--------------------	--------------	------------------	------------------	-----------------

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
252 Convention Center		AMSE-Sponsored Session: George W. Carver Conversation Series on Diversity and Equity 9:30–11:30 AM	
262 Convention Center	Exhibitor Workshop Ramp It Up! Science and Engineering Practices in the NGSS (Sponsor: TCI)		
264 Convention Center	Beams to Bridges: Graphing Stress	Building a Periodic Table Unit Plan Using American Association of Chemistry Teachers (AACT) Resources	Macromolecules and Fuel?
Junior Ballroom A Convention Center	NSTA Press Session: <i>Picture-Perfect STEM Lessons</i> : Using Children’s Books to Inspire STEM Learning, K–5	NSTA Press Session: NSTA Best Sellers Notable Notebooks and Exemplary Evidence with <i>Eureka!</i>	NSTA Press Session: Argument-Driven Inquiry in Grades 3–5: Three-Dimensional Investigations That Integrate Literacy and Mathematics

LOCATION	8:00–9:00 AM	9:30–10:30 AM	11:00 AM–12 Noon
Findlays Hyatt	STEM-ify Your Middle School Science Classroom	Let's Explore the Human Landscape	Interlacing Excitement for Science with Nonfiction Reading and Writing
Regency Ballroom E Hyatt	Stepping Up to STEM Success: Exploring Teacher Leadership Through Best Practices in 3-D Learning (3D strand)	Using LEGO® to Model the Impacts and Benefits of Dams	We Are STEM-able!
Regency Ballroom G Hyatt			Building Lifelong Learners Through the Passion of Science in Unique Settings (PASSION strand)
Buckeye A Hyatt	Engaging English Language Learners in the Secondary Science Classroom (LITERACY strand)	How to Get Published in an NSTA Journal	Using Crosscutting Concepts Everyday (3D strand)
Buckeye B Hyatt		Developing and Using 3-D Embedded Formative Assessments (3D strand)	Strategies for Planning Problem-Based Learning Units
Bluegrass A/B Hyatt	Three-Dimensional Teaching and Learning Powered by STEM Workshop 8:00 AM–4:00 PM		



—Photo courtesy of Jacob Slaton

Complete Exhibitor listings, as well as Exhibitor Workshops are available on the NSTA Conference app.

To download, visit:

www.nsta.org/conferenceapp

3D Molecular Designs	#401
3Doodler	#107
Activate Learning	#321
American Chemical Society	#112
American Meteorological Society	#204
Amplify	#213
ANATOMY IN CLAY® Learning System	#203
Animado Events	#120
Arabidopsis Biological Resource Center at The Ohio State University	#329
Arbor Scientific	#208
Army Educational Outreach Program (AEOP)	#218
Bedford, Freeman & Worth High School Publishers	#327
Bio-Rad Laboratories, Inc.	#219
BIOZONE	#221
Blocks Rock!	#116
Carolina Biological Supply Co.	#300
The Ceramic and Glass Industry Foundation	#414
Cereal City Science	#205
Clever Crazes for Kids	#109
The Cornell Lab of Ornithology	#103
COSI	#100
DinosaurTheory	#427

Education Projects, LLC	#408
Educational Innovations, Inc.	#326
Edvotek Inc.	#309
ExploreLearning	#223
Feed the World	#406
Flinn Scientific, Inc.	#113
Geyer Instructional Products	#101
Great Minds	#305
Groundwater Foundation	#420
GrowNextGen.org	#408
hand2mind	#229
HHMI BioInteractive	#314
Houghton Mifflin Harcourt	#412
iFLY	#335
Inq-ITS by Apprendis	#409
Kings Island	#108
Lab-Aids, Inc.	#207
Legends of Learning	#400
The Markerboard People	#418
McGraw-Hill Education	#102
Minerals Education Coalition	#413
MiniOne Systems	#322
miniPCR bio	#201
Nasco	#202
National Geographic Learning Cengage	#220
National Institute for STEM Education	#312
National Inventors Hall of Fame / Camp Invention	#407
The NEED Project	#122
NOAA Office of Education	#419
NSTA Community Hub	#233

The Ohio Academy of Science	#114
Ohio Oil and Gas Energy Education Program	#402
PASCO	#200
Pearson K–12 Learning LLC	#227
Presidential Awards for Excellence in Mathematics and Science Teaching	#423
School Specialty	#206
Shell Science Lab Challenge	307
South Dakota State University	#118
STEMscopes—Accelerate Learning	#313
Tangible Play, Inc. (Osmo)	#105
TCI	#121
TeacherGeek, Inc.	#333
Texas Instruments	#318
Toshiba / NSTA ExploraVision	#422
U.S. Space and Rocket Center	#127
University of Cincinnati—Online	#428
Vernier Software & Technology	#301
Western Michigan University	#128
WGBH Education	#119
WorldStrides	#319
Yardstick Educational Initiatives	#426



COLLABORATE WITH FELLOW EDUCATORS

FREE HANDS-ON WORKSHOPS

Friday, November 15th, 2019

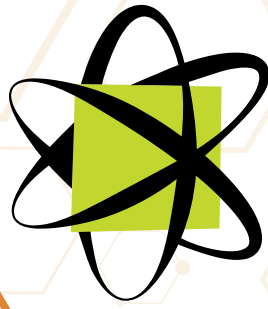
Join us for an interactive and collaborative workshop where you'll learn about classroom-ready experiments through a variety of hands-on investigations with probeware.

Time	Room 233
8:00–9:00am	Quick and Easy Experiments Using the Latest Technology
9:30–10:30am	Common Biology Experiments Using the Latest Technology
11:00–12:00pm	Common Middle School Experiments Using the Latest Technology
12:30–1:30pm	Common Physics Experiments Using the Latest Technology
2:00–3:00pm	Robots, Coding, and Science: A Complete STEM Experience
3:30–4:30pm	Common Chemistry Experiments Using the Latest Technology



**Enter to win a Go Direct® Temperature
Probe at Booth 301!**

Ready for the Next Generation!



CEREAL CITY SCIENCE™

by BCAMSC



Designed for the Next Generation Science Standards, Cereal City Science units engage students in sense-making of phenomena or designing of solutions through integrated curriculum of physical science, life science, earth science, engineering, and technology. The STEM-based units are equipped with everything needed to implement three-dimensional learning in Kindergarten through Middle School classrooms.

Curriculum Features:

- Figuring out phenomenon through modeling
- Common Core State Standards for ELA and Mathematics integration
- Tools for formative and summative assessment
- Teacher Guide, Student Journals, and Answer Key
- Materials for up to 32 students

Your partner in science instruction – Cereal City Science supports K-8 educators with professional learning opportunities including Unit Training, Next Generation Science Exemplar (NGSX), Science Leadership Corps and follow-up “Kit Chats.” Educators are immersed in modeling, science concepts, sense-making, and pedagogical strategies in full-day, in-person trainings and workshops.

NSTA Conference Workshops:

"It's Too Hard to Explain!" Develop Models to Construct Explanations
Choose from: Thursday, Nov. 14 or Friday, Nov. 15, 2019
2:00 p.m. - 3:00 p.m.
Duke Energy Convention Center, Rm 260/261



Stop by Booth 205 or learn more at cerealcityscience.org/nsta