

**NSTA's 2014**

**STEM**

SCIENCE TECHNOLOGY ENGINEERING MATHEMATICS

**FORUM & EXPO**



**INTEGRATION FOR  
INNOVATION!**



**MAY 14-17  
NEW ORLEANS**

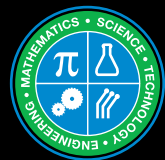
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Call toll free at 1-800-424-6723;  
outside the U.S., contact your local sales office.

**BIO-RAD**



# NSTA 2014 STEM Forum & Expo

New Orleans, Louisiana • May 14–17, 2014

Wednesday Kick-off: Evening Exhibit Preview & Welcome Reception followed by STEM Iron Chef Competition “Reveal!”

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### National Science Teachers Association

1840 Wilson Blvd.  
Arlington, VA 22201-3000  
703-243-7100  
E-mail: [conferences@nsta.org](mailto:conferences@nsta.org)  
[www.nsta.org](http://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)

# Sponsor and Contributors to the 2014 STEM Forum & Expo

NSTA and the 2014 STEM Forum Steering Committee are extremely grateful to the following companies and organizations for their generous support and contributions to the 2014 STEM Forum & Expo.

## Sponsor

Accelerate Learning



## Contributors

Audubon Aquarium of the Americas

Louisiana Children's Museum

The National WWII Museum



# Welcome to the 2014 STEM Forum & Expo



Eric Wilson



Bill Badders

Welcome to the third annual NSTA STEM Forum & Expo!

We're excited to bring you a forum filled with information and activities that will better prepare and enable you to explore, begin, or tweak a STEM initiative within your school, community, and/or district.

We are hopeful that you will find that this year's programming has accomplished our objectives of:

- helping educators to better understand the significance of STEM education;
- bringing an awareness and understanding of how STEM can be implemented, applied, and sustained in a K–12 setting;
- providing examples of successful outreach programs and partnerships; and
- assisting in identifying benchmarks for successful STEM programs and partnerships.

As you delve into the specifics of the program, you should find something for everyone, including invited panels, workshops, presentations, exhibits, and unique STEM-related networking opportunities.

On behalf of the steering committee and volunteers who are supporting this effort, we hope your experience at the 2014 STEM Forum & Expo is extremely rewarding and that you leave with passion, excitement, and confidence to lead the way in STEM education development.

**Eric Wilson**, NSTA 2014 STEM Forum Steering Committee Chairperson

**Bill Badders**, 2013–2014 NSTA President



## 2014 STEM Forum Steering Committee

### Chairperson

**Eric Wilson**

STEM Specialist  
Red Lion Area School District  
Red Lion, PA 17356  
[emwilson00@gmail.com](mailto:emwilson00@gmail.com)

### Committee Members

#### Primary Strand Leader

**Amy Bodin**

Instructional Data Coach  
Duluth Public Schools  
Duluth, MN 55811  
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#### Upper Elementary Strand Leader

**Mijana Lockard**

Teacher Resource Trainer  
Specialist  
STEM MSAP Grant Program  
Lincoln Avenue Academy (K–5)  
Lakeland, FL 33805  
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#### Middle Level Strand Leader

**Adrienne Gifford**

Advanced Technology Specialist  
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[adrienne.gifford@gmail.com](mailto:adrienne.gifford@gmail.com)

#### High School Strand Leader

**Kavita Gupta**

AP Chemistry Instructor and  
Science Department Chair  
Monta Vista High School  
Cupertino, CA 95014  
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#### Partnerships Strand Leader

**Reo D. Pruiett**

Texas STEM Program Officer  
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#### Administrators Strand Leader

**Thomas G. Evans**

Principal  
Eastern Technical High School  
Essex, MD 21221  
[tevans@bcps.org](mailto:tevans@bcps.org)

#### Honorary Steering Committee Member

**Jean May-Brett**

MSP Program Director  
Louisiana Dept. of Education  
Baton Rouge, LA 70804  
[jean.may-brett@la.gov](mailto:jean.may-brett@la.gov)

# NSTA Conferences and STEM Forum & Expo Go Green!

The National Science Teachers Association is committed to meeting today's environmental challenges by adopting eco-friendly practices both in our own day-to-day operations and at our 2014 STEM Forum & Expo, conferences, workshops, and other events. In addition, we strongly encourage our contracted conference facilities to follow green practices as well. Here are some of the ways NSTA's conference department has worked to minimize our impact on the environment:

## Online Forum Information and Personal Scheduler

Most of your STEM Forum & Expo arrangements can now be accomplished online ([www.nsta.org/2014stem](http://www.nsta.org/2014stem)). Register and make your housing reservations on the web. Program details are available to you on our website using the Session Browser/Personal Scheduler. Scheduling information on our website is up to date and more complete than that available through a printed piece.

## Final Forum Programs by E-Mail

Forum registrants are now given the option of receiving an electronic version (PDF) of the final program by e-mail approximately one week prior to the forum, further reducing printing and shipping requirements. Also, attendees are encouraged to use the NSTA Conference app, which provides all the tools necessary for a successful conference experience.

## Recycled Paper and Sustainable Print Services

Forum programs are printed on recycled paper whenever possible. In addition, Walsworth Print Group, the printer for our STEM Forum & Expo materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth Print Group works to reduce and recycle waste, use reduced or low-VOC chemicals, increase the recycled content of raw materials, and use soy- and/or vegetable-based inks. Walsworth Print Group has also obtained chain-of-custody certification for paper products to ensure they are being harvested from environmentally responsible sources.

## Eco-friendly Exhibition Practices

Our forum partner, Hargrove, Inc., offers many green product options and services in the production of our forum and conference exhibitions, including 100% recyclable carpet and padding, recycled exhibit structures, a "reclaimer" that recycles 92% of all solvents the company uses in production of graphics, use of LP natural gas in 75–90% of show-site vehicles, and many biodegradable and recycled products such as trash bags and wastebaskets. Their green efforts are extended operationally with reductions in electricity, heating fuel, and water usage, as well as a move to 100% recyclable and biodegradable products.

## Green Initiatives at Morial Convention Center

The Convention Center is committed to reducing the environmental impact of operations and services by providing the following:

- **Recycling.** The Convention Center's 26,000 meeting room and 7,600 ballroom chairs are 85% easily recyclable. Environmentally friendly materials as well as the recycling of waste materials were used in ballroom renovations.
- **Waste Reduction.** IP-based electronic signage has been installed at every meeting room, reducing the need for disposable signs. Old containers were repurposed as recycle stations throughout the facility for a savings of more than \$90,000.
- **Energy Efficiency.** Energy-efficient lighting and low-mercury lamps are installed throughout the entire facility. Exterior incandescent lights have been replaced with LED lamps for an energy savings as well as replacements with high-efficiency inductive lighting. Cooling water towers have been rebuilt for greater energy efficiency.
- **Indoor Air Quality.** Semi-permanent air handling filters have been replaced with MERV 13 filters that meet Green Building Council Indoor Air Quality credit for cleaner air.

## "Go Green" at the 2014 STEM Forum & Expo!

- Recycle your forum programs in the clearly marked recycle bins located throughout the Convention Center.
- Recycle or reuse your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- If you prefer to bring handouts to your session, use double-sided printing and/or recycled paper.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the forum.
- In advance of the forum, presenters are encouraged to post their presentations and handouts online on the Session Browser/Personal Scheduler.
- Evaluate sessions attended online.



Courtesy of Carl Purcell / New Orleans Convention & Visitors Bureau



## Getting Around Town

You'll find that many of New Orleans's hotels, attractions, restaurants, and nightlife are located within comfortable walking distance of each other. If you prefer not to walk, the Regional Transit Authority (RTA) operates local bus and streetcar routes. Call the RTA at 504-248-3900 or visit [www.norta.com](http://www.norta.com) for more information.

## Parking

Lot F of the Convention Center is available for public parking for \$10/day for cars and \$20/day for trucks with no in and out privileges. Go to [bit.ly/lee3w38](http://bit.ly/lee3w38) for a New Orleans area parking map. You may also contact your hotel about guest parking.

## Discounted Rental Cars

The toll-free number to contact an NSTA-designated car rental company is:

Enterprise 800-593-0505 16AH230

\* go to [www.enterprise.com](http://www.enterprise.com) and use "16AH230" in the "Optional: Coupon, Customer, or Corporate Number" box. Click on "search" and enter PIN "NST."

## Meeting Location and Times

STEM Forum & Expo hotels are Hilton New Orleans Riverside (*headquarters*), Embassy Suites New Orleans—Convention Center, Hampton Inn & Suites—Convention Center, Hyatt Place New Orleans/Convention Center, SpringHill Suites New Orleans Downtown, and Wyndham Riverfront New Orleans. STEM Forum registration, the exhibits, the NSTA Store, and sessions will be located at the Convention Center. The Evening Exhibit Preview and Welcome Reception is Wednesday, May 14, 4:00–6:30 PM, followed by the keynote speaker address (6:30–8:00 PM) and the STEM Iron Chef Competition "Reveal!" (8:00–9:30 PM). The forum will end on Saturday, May 17, at 10:00 AM.

## Registration

Registration is required for participation in all forum activities and the exhibits. The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all forum activities.

NSTA Registration and the NSTA Store, located in The Great Hall A of the Convention Center, will be open during the following hours:

Wed., May 14	3:00–8:00 PM
Thu., May 15	7:00 AM–5:30 PM
Fri., May 16	7:00 AM–5:30 PM

If you misplace your badge or tickets, present your personal ID at the Badge Reprint Counter in the Registration Area and you will be issued replacements. Only one replacement badge will be issued.

## Ground Transportation to/from Airport

A variety of ground transportation options are available to and from the Louis Armstrong New Orleans International Airport. An airport shuttle to and from the Central Business District hotels is approximately \$20 each way or \$38 round-trip. A fixed taxi rate of \$33 (one to two people) is charged from the airport to most areas of New Orleans. For parties of more than two, the fare is \$14 per person.



Courtesy of Carl Purcell / New Orleans Convention & Visitors Bureau

# Registration, Travel, and Hotels



**1. Embassy Suites New Orleans–Convention Center**

(three blocks from Hall A)  
315 Julia St.

**2. Hampton Inn & Suites–Convention Center**

(two blocks from Hall A)  
1201 Convention Center Blvd.

**3. Hilton New Orleans Riverside (Headquarters)**

(four blocks from Hall A)  
2 Poydras St.

**4. Hyatt Place New Orleans/Convention Center**

(across the street from Hall B)  
881 Convention Center Blvd.

**5. SpringHill Suites New Orleans Downtown**

(three blocks from Hall A)  
301 St. Joseph St.

**6. Wyndham Riverfront New Orleans**

(two blocks from Hall A)  
701 Convention Center Blvd.

**Housing Questions or Concerns?**

If you have any questions or concerns about your housing, please contact Orchid Events Solutions toll-free at 877-352-6710.





Don't forget to visit the NSTA Store for a selection of STEM titles as well as hundreds of teaching resources for STEM educators.

## NSTA Exhibits

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

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all forum activities. A map display of the Exhibit Hall will be on-site and accessible via our Conference app. A complete list of exhibitors and contact information starts on page 62.

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

*Evening Exhibit Preview and Welcome Reception*

Wed., May 14 4:00–6:30 PM

*Exhibits*

Thu., May 15 12:30–3:30 PM

Fri., May 16 12:30–3:30 PM

**Lead Retrieval.** NSTA exhibitors use lead retrieval, a paperless tracking system to allow them to receive fast, accurate information about forum attendees who have visited their booths. With the lead retrieval system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the STEM Forum & Expo is still fresh in your mind.

**Exhibitor Workshops.** Exhibitor-sponsored workshops for STEM teachers are offered throughout the forum. These workshops give you an opportunity to

use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 73 for a complete listing of exhibitor workshops.

## Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in and pick up your ribbon at the Presenters/Presiders booth in the Registration Area after you have registered for the forum and received your name badge.

## Wi-Fi at the Convention Center

Complimentary Wi-Fi is available in three distinct areas of the Convention Center:

- The Atrium Café—Lobby of Hall C
- The Food Court—Lobby of Hall F
- Jazz City Café—Lobby of Hall J

Click on the Service Set Identifier (SSID): **MCCNOFFREEWIFI** to access.

## NSTA Exhibit Booths

Stop by the NSTA Exhibit Booths to learn more about NSTA's professional development, programs, and the *Next Generation Science Standards*.

## NSTA Store

You are invited to browse the NSTA Store, where you're sure to find hundreds of the very best teaching resources for STEM educators. NSTA Press® books uniquely blend accurate scientific content with sound teaching strategies, and they appeal to STEM educators of all grade bands and disciplines. Examine some of our latest books—including *Doing Good Science in Middle School, Expanded 2nd Edition: A Practical STEM Guide*; *Using Physical Science Gadgets & Gizmos, Grades 6–8*; *Using Physics Gadgets & Gizmos, Grades 9–12*; *Models and Approaches to STEM Professional Development*; and the brand-new *Science*

*Fair Warm-Up* series. Also, be sure to check out our first-ever line of children's books—from NSTA Kids.

In addition, we carry dozens of wonderful NSTA Gear items—such as T-shirts, mugs, and pencils—as reminders of your forum experience or as gifts for your family, colleagues, and students. Show your love of science and pride in teaching with items from our "Science Matters" and "I Love Science" NSTA Gear product lines.

The NSTA Store is located in The Great Hall A of the Convention Center. All attendees receive discounts of 20% on NSTA Press and Gear items and 10% on books from other publishers. Perhaps best of all—enjoy free shipping when you place your order online in the on-site store for both books and Gear.

## Interested in Joining NSTA?

The NSTA Membership Booth is located in the NSTA Store in The Great Hall A of the Convention Center. Stop by to learn more about the benefits of becoming an NSTA member, including all the best professional development and resources a STEM educator needs. If you received a 6-month free membership coupon at registration, please redeem it here.

## Forum Evaluation

All forum attendees are invited to complete a forum evaluation online at [svy.mk/1gXnrzY](http://svy.mk/1gXnrzY).

## Message Center

A Message Center for forum attendees is available in the NSTA Registration Area. No messages, except extreme emergencies, can be broadcast over the public address system.

## Graduate Credit Opportunity

STEM Forum & Expo attendees can earn one graduate-level credit in professional development through Framingham State University. For details on the assignment requirements, visit [www.framingham.edu/nsta](http://www.framingham.edu/nsta). Questions? E-mail Nancy Proulx at [nproulx@framingham.edu](mailto:nproulx@framingham.edu) or call 508-626-4034.

## NSTA Conference App



Navigate the STEM Forum & Expo from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful STEM Forum & Expo experience. Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center and Exhibit Hall; Social Media plugins; and a note-taking tool. Scan QR code or visit [www.nsta.org/conference\\_app](http://www.nsta.org/conference_app) to download the app. *Note:* Make sure to create a CrowdCompass account when logging in to be able to export any notes taken with the app.

## LSTA and LATM Booth

The Louisiana Science Teachers Association (LSTA) and the Louisiana Association of Teachers of Mathematics (LATM) will be sharing booth space located at Attendee Registration in The Great Hall A at the Convention Center—a one-stop source for learning more about science and math education in Louisiana and the benefits of becoming a member of LSTA and/or LATM. Membership forms and information on association activities, such as the 2014 joint

state LSTA/LATM conference will be available. You'll also want to visit to learn more about the three off-site networking socials being offered by local venues and volunteers on Thursday evening (only)—Aquarium/IMAX, French Quarter Nature Walk, and the National WWII Museum. The events are free but are limited. Visit the LSTA/LATM Booth early to pick up tickets and guarantee your spot!

## Audiovisual Needs

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides (an LCD projector and screen). For any last-minute AV needs, presenters must arrange and pay for their own equipment. Audio Visual Production Solutions, the designated AV company on-site, will be located in the following room:

- B104–105, Convention Center

## Business Services

Located in front of Hall F inside the Convention Center, the UPS Store offers a variety of services, including photocopying, scanning, faxing, use of computer work stations, and

same-day shipping. During the week of the forum, hours will be

Wed., May 14	9:00 AM–6:00 PM
Thu., May 15	8:00 AM–6:00 PM
Fri., May 16	8:00 AM–6:00 PM
Sat., May 17	8:00 AM–6:00 PM

For more information, please call 504-670-8941 or e-mail [store6216@theupsstore.com](mailto:store6216@theupsstore.com).

## First Aid Services

The EMS Medical Station is located in Lobby B-2 of the Convention Center; look for the red cross on the door. Attendees in need of first aid may simply walk into the medical station, which will be staffed by a Registered Nurse during the STEM Forum & Expo. For emergencies, pick up any red emergency phone at the Convention Center or call 504-582-3040 from any phone to connect to a 24-hour Public Safety Base Station.

## Lost and Found

All lost-and-found items will be turned in at the NSTA Exhibitor Registration counter at the Convention Center.

## Online Session Evaluations and Tracking Professional Development

*All attendees can evaluate sessions online while simultaneously tracking their professional development certification (based on clock hours).*

Help NSTA's **GREEN** efforts by completing session evaluations online May 14–29, 2014. Visit [www.nsta.org/evaluations](http://www.nsta.org/evaluations) to complete a short online session evaluation for each session you attend.

Concurrent session presenters may also complete evaluations for their own sessions in order to track professional development credit.

To evaluate a session via [www.nsta.org/evaluations](http://www.nsta.org/evaluations):

- Enter your badge number (if you don't remember your badge number, click "help me find my badge number").
- Type the beginning of the session title in the "Lookup Session" field, scroll down to find the correct session, and click the "Submit Session" button. The session information will appear and you can begin to evaluate the session.
- When finished evaluating the session, click the "Submit Evaluation" button.
- Repeat this process for each session attended.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that are NOT available for online session evaluation. This form can also be used to take notes on sessions attended that are available for online session evaluation.

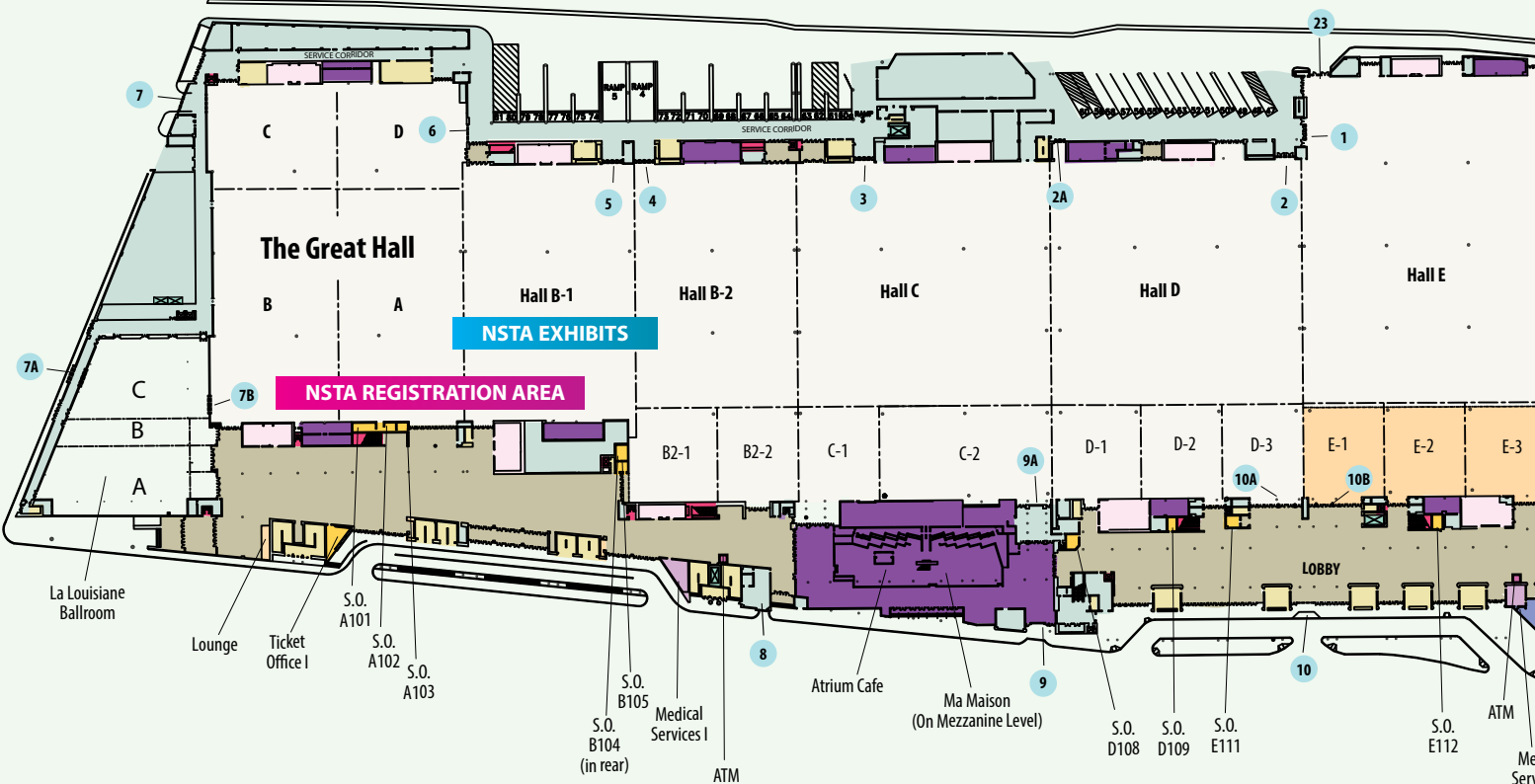
Beginning June 13, 2014, an attendee can view his or her transcript at the NSTA Learning Center ([learningcenter.nsta.org](http://learningcenter.nsta.org)) by clicking on "My PD Record and Certificates." Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits). Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the forum. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.



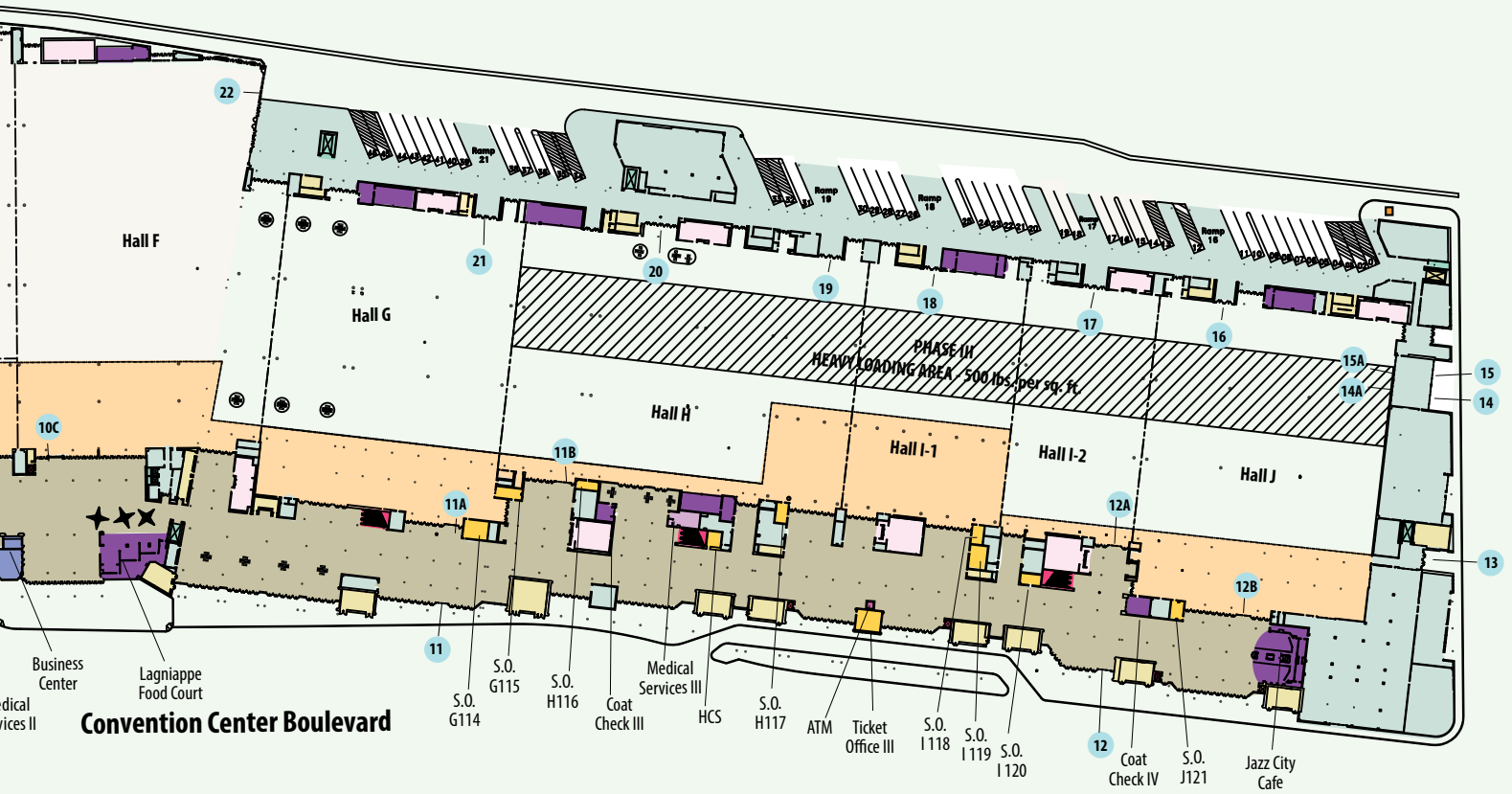
—Courtesy of Chris Granger / New Orleans Convention & Visitors Bureau

# Morial Convention Center

## First Floor

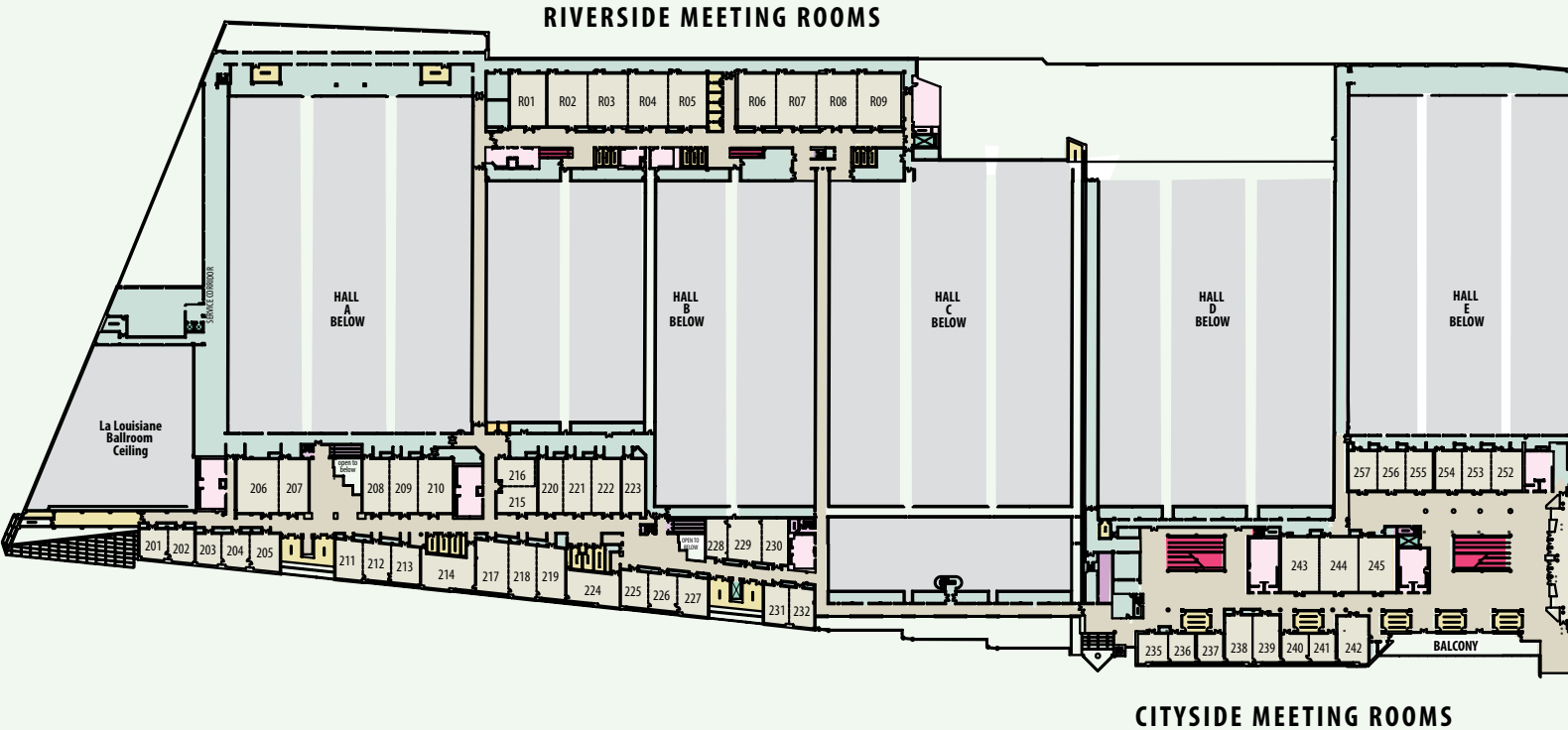


# Morial Convention Center

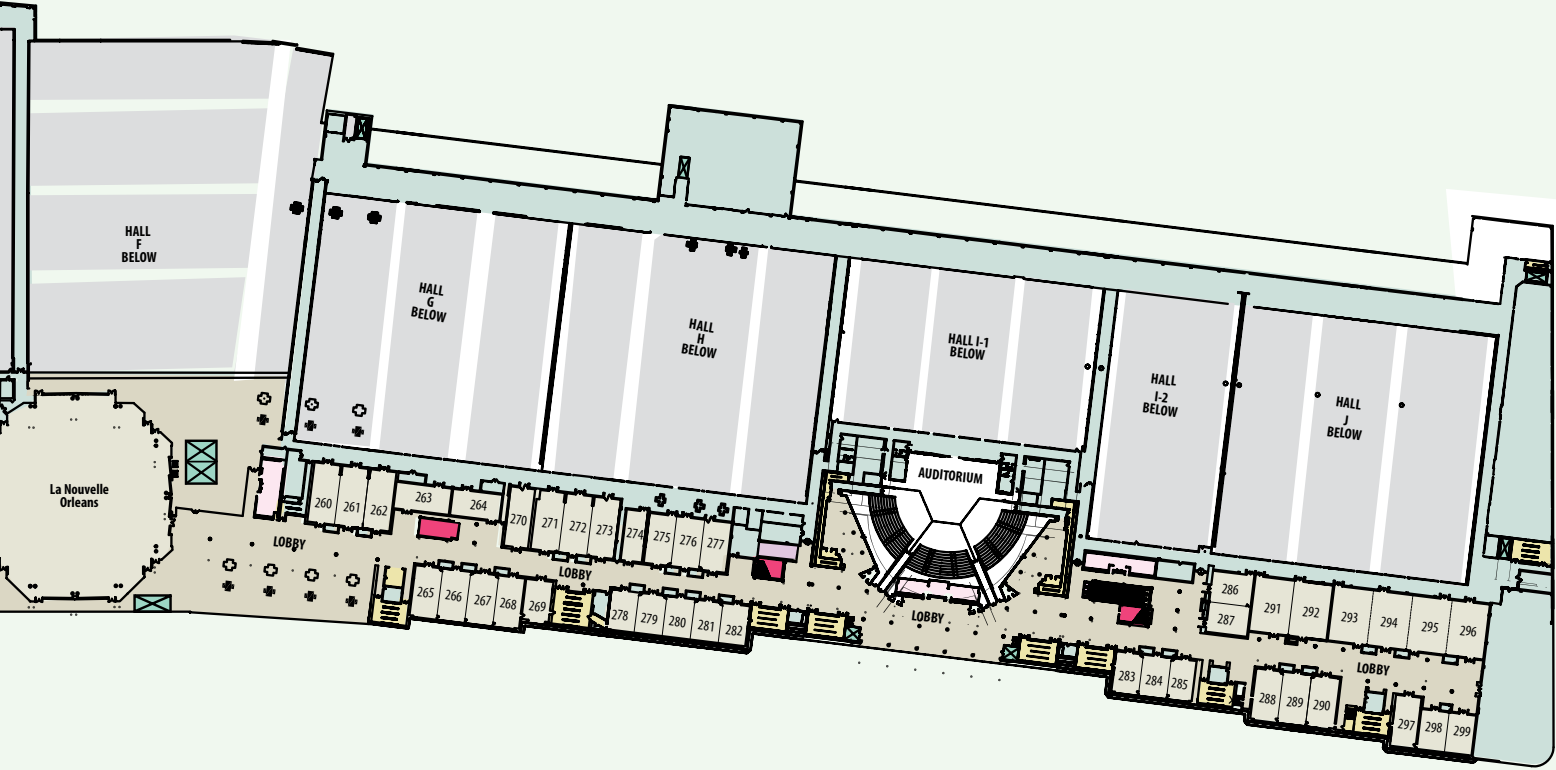


# Morial Convention Center

## Second Floor



# Morial Convention Center



## Executive Office

David L. Evans, Executive Director

### BOARD RELATIONS

Michelle Butler, Executive Administrator and Manager

### COMMUNICATIONS

#### Legislative Affairs

Jodi Peterson, Assistant Executive Director  
Kate Falk, Senior Manager, Public Relations  
Cindy Workosky, Communications Specialist

#### Marketing

Jennifer Gulley, Manager

#### Social Media and e-Newsletters

Lauren Jonas, Director

#### Website

Tim Weber, Assistant Executive Director, Web and News

### DEVELOPMENT OFFICE

Ann Korando, Director, Major Gifts  
Azi Ambrishami, Development Coordinator,  
Development Services

### MEMBERSHIP

Teshia Birts, Senior Manager, Chapter Relations

### NGSS

Ted Willard, Program Director, COMPASS  
Jennifer Horak, NGSS Project Manager

### NOMINATIONS AND TEACHER AWARDS PROGRAM

Amanda Upton, Manager

## Operations Division

Maira Fathy Baker, Associate Executive Director,  
COO, and CFO

Shantee Young, Administrative Assistant

### BUSINESS & FINANCE

Vacant, Director, Accounting and I/S  
Kristin Carter, Director, Grants and Contracts  
Shawn Crowder, Grant Administrative Support  
Specialist  
Vacant, Senior Accountant  
Diane Cash, Manager, Accounts Payable  
Gaby Bathiche, Accountant  
LaKeisha Hines, Jr. Accountant

## FACILITIES AND OPERATIONS

Christine Gregory, Director  
Rodney Palmer, Building Engineer  
Donovan Parker, Mailing Services Coordinator  
Joe Harpe, Mailing Services Assistant

## HUMAN RESOURCES

Irene Doley, Assistant Executive Director  
Janine Smith, HR Benefits Manager and Generalist

## MANAGEMENT INFORMATION SYSTEMS

Todd Wallace, CIO  
Ryan Foley, Director, Systems Development  
Mike Sullivan, Director, IT  
Edwin Pearce, Manager, IT Support  
Martin Lopping, Manager, Web Development  
Edward Hausknecht, Web and Database  
Developer

## PUBLICATIONS OPERATIONS

Elsie Maka, Manager, Inventory and Distribution

## SALES

Jason Sheldrake, Assistant Executive Director  
Rick Bounds, Assistant Executive Director,  
Publications Operations  
Kimberly Hotz, Exhibits Manager  
Becky Shoemaker, Advertising Production  
Manager  
Jeffrey LeGrand, Advertising and Exhibits Sales  
Associate  
Danielle McNeill, Project Manager, NSTA Mailing  
List

## SERVICE CENTRAL

Michelle Chauncey, Director, Customer Service  
Nelly Guacheta, Senior Manager  
Jasmine McCall, Special Projects Coordinator/  
CSR  
Cindy Thomas, Fulfillment Coordinator/Claims  
Correspondent  
Kiara Pate, Customer Service Representative  
Rob McNeely, Customer Service Representative

## Services Division

Al Byers, Acting Associate Executive Director,  
e-Learning and Government Partnerships  
Caroline Nichols, Executive Administrator and  
International Program Coordinator  
Jodie Rozzell, Program Director

## CONFERENCES AND MEETINGS

Delores Howard, Assistant Executive Director  
Dina Weiss, Associate Director  
Linda Crossley, Assistant Director/Managing  
Editor  
Donna Fletcher, Conference Coordinator  
Christina Dierssen, Project Editor  
Kimberlyn McDonald, Registration Supervisor/  
Administrative Assistant  
Jo Neville, Database Manager  
Beverly Shaw, Conference Administrator  
Marcelo Nunez, Exhibit Services Coordinator

## PROFESSIONAL PROGRAMS

Vacant, Assistant Executive Director  
Wendy Binder, SPIR Project Director  
Sherri Bracey, Program Manager  
Tiffany McCoy, Program Coordinator

## LEARNING CENTER/SCI LINKS

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Dayna Anderson, Coordinator, e-Learning  
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### *NSTA Mission Statement*

The mission of NSTA is to promote excellence and innovation in science teaching and learning for all.

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Rajeev Swami, NMLSTA Affiliate

Representative

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*All cities are subject to change pending final negotiation.*

### National Conferences on Science Education

Chicago, Illinois  
March 12–15, 2015

Nashville, Tennessee  
March 31–April 3, 2016

### 2015 STEM Forum & Expo

Minneapolis, Minnesota  
May 20–23, 2015

### Area Conferences on Science Education

#### 2014 Area Conferences

Richmond, Virginia—October 16–18  
Orlando, Florida—November 6–8  
Long Beach, California—December 4–6  
*(in Collaboration with CSTA)*

#### 2015 Area Conferences

Reno, Nevada—October 22–24  
Philadelphia, Pennsylvania—November 12–14  
Kansas City, Missouri—December 3–5



— courtesy of Richmond Metropolitan Convention and Visitors Bureau

## General Session

Wednesday, May 14, 6:30–8:00 PM



**Ainissa Ramirez**  
Scientist, Educator,  
and Science Evangelist

### Just STEM It!

Join Ainissa as she shares the real reason for STEM education—it prepares students for the 21st century. The future requires creative problem solvers to face the challenges we cannot predict today. This uncertainty makes the role of teachers more important than any other time in history. This talk invites educators to consider their role in creating a better future.

(See page 21 for details.)

## Wednesday, May 14

3:00–8:00 PM	Forum Registration and NSTA Store . . . . .	5
4:00–6:30 PM	Evening Exhibit Preview and Welcome Reception . . . . .	21
6:30–8:00 PM	General Session: Ainissa Ramirez . . . . .	21
8:00–9:30 PM	STEM Iron Chef Competition “Reveal!” . . . . .	22

## Thursday, May 15

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9:15–10:15 AM	Panel Workshops . . . . .	23
10:30–11:30 AM	Administrator Panel Discussion . . . . .	26
11:45 AM–12:45 PM	Administrator Panel Workshop: <i>How the STEMCenter Works at Eastern Tech.</i> . . . . .	32
12:30–3:30 PM	Exhibits . . . . .	33
5:30 PM	Networking Socials (off-site) . . . . .	41

## Friday, May 16

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12:30–3:30 PM	Exhibits . . . . .	53
5:30–7:00 PM	STEM Iron Chef Competition Judging . . . . .	60

## Saturday, May 17

8:00–10:00 AM	Closing Session: Strand Leader Reports and Student Panel Discussion . . . . .	61
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—Courtesy of Jeff Anding / New Orleans Convention & Visitors Bureau

Stop by the Louisiana Science Teachers Association (LSTA) and the Louisiana Association of Teachers of Mathematics (LATM) Booth at Attendee Registration in the Great Hall A to sign up for one of three networking socials planned for Thursday evening, starting at 5:30 PM. The networking opportunities include a French Quarter Nature Walk; a showing of the film *Beyond All Boundaries* at the National WWII Museum; and a screening of the IMAX film *Hurricane on the Bayou* at the Audubon Aquarium of the Americas. See page 41 for details.

See pages 76–81 for an index of all strand sessions.

## Primary (Early Childhood)

**Pr** How do we get students prepared to think and work in a global world? Let's begin with effective preK–2 STEM instruction. Providing students with inquiry-based experiences in Science, Technology, Engineering, and Mathematics is the key to unlocking their emerging world. The foundational skills learned and mastered through STEM integration during the early years lead to citizens who enter adulthood proficient and prepared.

## Upper Elementary

**E** How do we respond to research that indicates that by the time our students reach the fourth grade, a third of them will lose interest in science? How do we ensure that our students develop a solid foundation in the STEM areas so that they are prepared to both work and live in the 21st century? To reverse this trend and ignite their interest in future STEM careers, elementary students need quality learning activities and experiences that spark curiosity, promote confidence, align to the rigor of current standards, and develop competence in STEM subjects. The sessions in this strand showcase programs and instructional strategies that support STEM and have been successfully integrated into the elementary core curriculum.

## Middle Level

**M** Equipping students with the inspiration, ingenuity, and curiosity to pursue STEM fields is a top priority at the middle school level. A successful middle school STEM program allows students to create, innovate, communicate, and collaborate on projects that are driven by their own interests. The sessions in this strand showcase learning environments where Science, Technology, Engineering, and Mathematics interconnect to serve as a vehicle for discovery, innovation, and independent problem solving.

## High School

**HS** As we move forward in the 21st century and begin preparing high school students to enter the workforce and college, STEM careers should be optimal goals for all students. Traditionally, high school content would be taught in isolation of other areas of study. Now, Science, Technology, Engineering, and Mathematics must be effectively integrated and delivered in impactful and meaningful ways. Using an integrated approach that includes real-world connections and hands-on experiences will establish a solid STEM education for students in grades 9–12. The sessions in this strand will highlight strategies and curriculum design both for formal and informal learning environments that best facilitate effective STEM integration and STEM Career Awareness.

## Partnerships

**Pa** As the Nation recognizes the importance of STEM education to our economic future, we are beginning to see collaborations in STEM education between preK–middle schools, high schools, higher education, and business and cultural communities, with varying degrees of success and impact. The sessions in this strand highlight select initiatives that have demonstrated an impact and have been successfully implemented.

## Administrators

**A** The United States possesses the most innovative, technologically capable economy in the world, and yet its Science, Technology, Engineering, and Mathematics (STEM) education is failing to ensure that all American students receive the skills and knowledge required for success in the 21st-century workforce. The STEM fields are collectively considered the core technological underpinnings of an advanced society, according to both the National Research Council and the National Science Foundation. In many forums (including political/governmental and academic), the strength of the STEM workforce is viewed as an indicator of a nation's ability to sustain itself. Maintaining a citizenry that is well versed in the STEM fields is a key segment of the U.S. public education agenda.

Successful STEM programs at the primary and secondary levels align the interrelated nature of science and mathematics education with an emphasis on technology and engineering through hands-on and real-life applications for elementary, middle school, and high school students. The new *Common Core State Standards*, specifically the Standards for Mathematical Practice, help to connect all areas of STEM. The integration of STEM content to answer complex questions, investigate global issues, and develop solutions for challenges and real-world problems requires the use of practices such as making sense of problems and persevering in solving them; reasoning abstractly and quantitatively; constructing viable arguments and critiquing the work of others; modeling with mathematics; using appropriate tools strategically; attending to precision; looking for and making use of structure; and looking for and expressing regularity in repeated reasoning. As the world moves toward a knowledge-based economy, how do we consider new ways to seed, nurture, and cultivate our manpower to sustain long-term growth and innovation? How can STEM education programs be factored into school improvement plans and master schedules? How do schools encourage and manage support from all stakeholders?

## ***First-ever STEM Iron Chef Competition***

**Team "Reveal!":** *Wednesday, May 14, 8:00–9:30 PM*  
*The Great Hall B/C, Convention Center*

**Team Judging:** *Friday, May 16, 5:30–7:00 PM*  
*Room R09, Convention Center*

On Wednesday evening, participants will be given the option of choosing one of six challenges, divide into teams, and then be given the ingredients relevant to the challenge they choose.

Teams will work together over the next few days to develop their recipes for a brief presentation on Friday evening. Creativity is encouraged! Prizes will be awarded. For details, see page 22.



ONLY register for this event (W-1 ticket) if you are planning to COMPETE. Observers need not register.

**The following venues have extended special offers  
for STEM Forum & Expo attendees.**

**The Louisiana Children's Museum**

[www.lcm.org](http://www.lcm.org)

The Louisiana Children's Museum is offering free admission and a 15% discount at the Louisiana Children's Museum Store to STEM Forum & Expo attendees (must show badge for discount) available Wednesday–Saturday from 9:30 AM to 4:30 PM. Admission for visitors without a STEM Forum & Expo badge is \$8.50 per person. The museum is located at 420 Julia Street.

**The National WWII Museum**

[www.nationalww2museum.org](http://www.nationalww2museum.org)

The National WWII Museum located at 945 Magazine Street is offering a \$2 discount off museum admission for STEM Forum & Expo attendees who show their badge at the ticket counter Wednesday–Saturday 9:00 AM to 5:00 PM. For individual rates, go to [www.nationalww2museum.org](http://www.nationalww2museum.org). \*Note: A limited number of tickets will be available for a free Thursday Evening Networking Event at the museum. For details, go to the LSTA/LATM Booth at Attendee Registration in The Great Hall A.

### **Tweet & Meet Lounge**

*Thursday and Friday, May 15–16, 8:00 AM–6:00 PM*

*Lobby A, Convention Center*



Continue conversations and meet up with colleagues at our Tweet & Meet Lounge, located in Lobby A of the Convention Center, Thursday and Friday from 8:00 AM to 6:00 PM. Look for signs.

To access the Wi-Fi at the lounge, click on the Service Set Identifier (SSID): NSTA2014 and use password: stem2014.



*Photo of 2013 STEM Forum & Expo Strand Leader Report*

### **Closing Session**

#### **How Can We Better Prepare Our Students for STEM-related Careers?**

*Saturday, May 17, 8:00–10:00 AM*

*R09, Convention Center*

The closing session (page 61) will provide an opportunity to hear discussions regarding integration and innovation that were shared during the STEM Forum & Expo. Each of the six strand leaders will provide a brief report. Questions will be answered at the end of these reports.

This session will conclude with insights on STEM education from young people. Motivated local students will discuss educational opportunities that have been available to them. The students will relay their concerns about any potential lack of

skills in STEM subject areas that might have better prepared them as they graduate from high school as well as share their visions and dreams of securing STEM-related careers and what kind of support they will need to move more successfully in that direction.

8:00–9:00 AM

**Strand Leader Reports followed by Q&A**

9:00–10:00 AM

**Student Panel Discussion: Today's STEM Students**







**4:00–6:30 PM Evening Exhibit Preview and Welcome Reception**

*The Great Hall A, Conv. Center*

The STEM Forum & Expo kicks off with this exclusive sneak preview of the Exhibit Hall and reception. Be among the first to take in the sights and sounds of the Expo as you enjoy complimentary refreshments throughout the exhibit hall. Exhibitors will have hands-on activities, free resources, giveaways, best practices, and more—all tailored specifically to teachers’ needs. Brand-new and soon-to-be-released STEM resources will be featured by industry leaders. Don’t forget to come back for our regular exhibit hours on Thursday and Friday. For a complete list of exhibitors, see page 62.

**Strands**

The STEM Form & Expo Steering Committee has planned the forum around six strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 18. On page 76, you will find the sessions grouped according to their strand.

-  **Primary (Early Childhood)**
-  **Upper Elementary**
-  **Middle Level**
-  **High School**
-  **Partnerships**
-  **Administrators**

*The ideas and opinions expressed in the forum sessions, and in any handout materials provided, are those of the presenter. They are not those of the National Science Teachers Association nor can any endorsement by NSTA be claimed.*

**6:30–8:00 PM General Session Just STEM It!**

*(General)*

*The Great Hall B/C, Conv. Center*



**Ainissa Ramirez**, Scientist, Educator, and Science Evangelist, New York, NY

Welcome and Introduction of Speaker: Bill Badders, NSTA President, and Retired Director, Cleveland Math and Science Partnership, Cleveland Heights, OH

Platform Guests: Ainissa Ramirez; Bill Badders; Eric Wilson, Chair, 2014 STEM Forum & Expo Steering Committee, and Red Lion (PA) Area School District; Amy Bodin, Primary Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Duluth (MN) Public Schools; Mijana Lockard, Upper Elementary Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Lincoln Avenue Academy (K–5), Lakeland, FL; Adrienne Gifford, Middle Level Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Open Window School, Bellevue, WA; Kavita Gupta, High School Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Monta Vista High School, Cupertino, CA; Reo D. Pruiett, Partnerships Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Educate Texas, Dallas; Thomas G. Evans, Administrators Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Eastern Technical High School, Essex, MD; Jean May-Brett, Honorary Steering Committee Member, 2014 STEM Forum & Expo Steering Committee, and Louisiana Dept. of Education, Baton Rouge

In this presentation, science evangelist Ainissa Ramirez will show audience members the real reason for STEM education—it prepares students for the 21st century. The future requires creative problem solvers to face the challenges we cannot predict today. This uncertainty makes the role of teachers more important than any other time in history. This talk invites educators to consider their role in creating a better future.

*Ainissa Ramirez is a science evangelist and science lecturer, passionate about getting kids of all ages excited about science. She is dedicated to sharing the joy of materials, process, and creativity with students of all ages. At Yale, Ainissa is the founder of the award-winning science lecture series for children called Science Saturdays. She has served as a science advisor to WGBH/NOVA, National Geographic, Time magazine, and the American Film Institute.*

### 8:00–9:30 PM STEM Iron Chef Competition “Reveal!”

(Ticket Required; W-1) The Great Hall B/C, Conv. Center

Teams of chefs will be challenged with creating one of the following meals in our “Kitchen”:

- **STEM Stew:** Combine the ingredients to create the perfect stew that blends science and math instruction while focusing on a hands-on approach.
- **Mardi Gras Feast:** Use the ingredients to serve up a mouthwatering STEM program that uses engineering as a centerpiece of scrumptious feast.
- **Homemade Brunch:** Create a project where students are challenged to invent, tinker, make, and/or build something!
- **Fusion Cuisine:** Create a project aligned with the science and engineering practices in the new NGSS with the given ingredients.
- **Thanksgiving Feast:** To create a professional development plan for incorporating STEM in a high school using the given ingredients.
- **Presidential Banquet:** Even the Obama Family would be envious!

Teams will be meeting, tweeting, and challenging (i.e., “trash talking”) one another to be the BEST in creating their respective meal! Final presentations will be given on Friday evening, May 16. A panel of three esteemed judges will be considering creativity, entertainment, and accuracy to identify the best team! Only 3–4 minutes will be allowed per team presentation.

Audience participation is encouraged and invited via a twitter wall during the Friday evening judging. Most importantly, this is an opportunity to access creative and innovative take-aways of ideas for STEM classrooms—at any level!

This event will allow attendees to network in an engaging and fun way as well as to meet new and like-minded professionals! Whether as a team or audience participant, you will have access to the *STEM Chef website* (see Program Changes for details) where all of the final products will be posted.

*Note:* Preregistration is required for participation as there is limited capacity.



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### 8:00–9:00 AM Invited Panels

**Pa** **How Can STEM Partnerships Support Students and Teachers Doing Science and Engineering Projects?**

(General) R02–R05, Conv. Center

Moderator: **Jim Short** ([jshort@amnh.org](mailto:jshort@amnh.org)), American Museum of Natural History, New York NY

**Tara Chudoba** ([tchudoba@nysci.org](mailto:tchudoba@nysci.org)), New York Hall of Science, Queens

**Frederic Bertley** ([fbertley@fi.edu](mailto:fbertley@fi.edu)), The Franklin Institute, Philadelphia, PA

**Nicole Kowrach** ([nicole.kowrach@msichicago.org](mailto:nicole.kowrach@msichicago.org)), Museum of Science and Industry, Chicago, IL

**Jay Holmes** ([jholmes@amnh.org](mailto:jholmes@amnh.org)), American Museum of Natural History, New York, NY

The panel will share different approaches to formal/informal programs focused on science and engineering practices. The panel will include different perspectives about how professional development providers at museums and science centers, teacher leaders, and school administrators are working together to improve student learning. Panelists will discuss questions such as how can the assets of informal science institutions be leveraged to support the curriculum in schools, what resources and support do teachers need to engage in Project-Based Learning with their students, and what is the role of school administrators in developing partnerships with organizations outside the school system? Together, the panel will provide a comprehensive overview of how partners working inside and outside the school system can improve teachers' practice and students' learning

**How Do I Know If My STEM School Is Successful? STEM Metrics and Benchmarks**

(General) R06–R09, Conv. Center

Organizer/Moderator: **Jeanne Century** ([jcentury@uchicago.edu](mailto:jcentury@uchicago.edu)), The University of Chicago, IL

**Scott Bennett** ([sbennett@reyn.org](mailto:sbennett@reyn.org)), eSTEM Academy, Reynoldsburg, OH

**Melanie LaForce** ([laforce@uchicago.edu](mailto:laforce@uchicago.edu)), Outlier Research & Evaluation, Chicago, IL

**Reo Pruiett** ([rpruiett@ctexas.org](mailto:rpruiett@ctexas.org)), Educate Texas, Dallas

**Alison White** ([awhiteua@akron.k12.oh.us](mailto:awhiteua@akron.k12.oh.us)), Ohio STEM Learning Network-Akron Hub, Akron

The metrics and benchmarks panel will share a range of perspectives on how teachers, school leaders, and policy-makers can evaluate STEM school activities and progress. Panelists will discuss research findings about the core components of inclusive STEM high schools across the nation, as well as state-level efforts to create and use rubrics that define and measure successful STEM education. In addition, panelists will describe their personal experiences with the development of STEM education as teachers and administrators. Together, the panel will provide a comprehensive look at how new and established STEM educators can develop and evaluate their work and schools.

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### 9:15–10:15 AM Panel Workshops

**Pa** **Urban Advantage: Formal-Informal Science Education Partners Working Together in STEM Education**

(General) 210, Conv. Center

**Jay Holmes** ([jholmes@amnh.org](mailto:jholmes@amnh.org)) and **Jim Short** ([jshort@amnh.org](mailto:jshort@amnh.org)), American Museum of Natural History, New York, NY

This workshop presents how the Urban Advantage program in New York City has developed an effective partnership between eight informal science education institutions and the New York City school system to support student investigations and STEM education.

**Pa** **The Museum of Science and Industry's C.A.S.E. Model**

(General) 215, Conv. Center

**Elsie Ovrachim** ([elsie.ovrachim@msichicago.org](mailto:elsie.ovrachim@msichicago.org)), Museum of Science and Industry, Chicago, IL

Join me for an overview of MSI's Center for the Advancement of Science Education, with a special focus on in-school and out-of-school STEM support.

**Pa** Science Museum as Catalyst for Bringing Design and Engineering Practices into the Classroom

(General) 216, Conv. Center  
**Scott Wayne Indiana** (*sindiana@nysci.org*), New York Hall of Science, Queens

**Amanda Solarsh** (*amandasolarsh@gmail.com*) and **Gina Tesoriero** (*ginatesoriero@gmail.com*), Simon Baruch MS104, New York, NY

NYSCI museum educators and teachers share resources from Design Lab, a museum-based innovation laboratory for bringing engineering design into the classroom to meet the NGSS. These resources include a suite of dynamic curricular resources, digital tools, and professional development experiences that inspire children to engage with STEM concepts in the context of design problems children find worth solving, such as forced perspective photography projects involving proportional reasoning. The workshop will offer strategies and insights into how museums and teachers can build bridges between formal and informal education to promote innovative and lasting classroom practices that support the standards.

**Pa** Science Museum/School Partnerships: A Blueprint to Success

(General) 221, Conv. Center  
**Frederic Bertley** (*fbertley@fi.edu*), The Franklin Institute, Philadelphia, PA

Leveraging the model of The Franklin Institute’s partnership school, Science Leadership Academy, participants in this workshop will learn about successes and pitfalls of museum partnership schools. Science Leadership Academy is an inquiry-driven, project-based public magnet high school founded by The Franklin Institute. The workshop will focus primarily on the science museum side of the partnership and what contributions science centers can provide to formal STEM education arenas. The workshop will also discuss how The Franklin Institute “Science Leadership Academy” model has been leveraged to expand locally, regionally, and internationally.

**An Introduction to STEM School Model Articulation**  
(General) 228, Conv. Center

**Heather King** (*hking@uchicago.edu*) and **Melanie LaForce** (*laforce@uchicago.edu*), Outlier Research & Evaluation, Chicago, IL

**Jeanne Century** (*jcentury@uchicago.edu*), The University of Chicago, IL

This workshop will provide an understanding of the STEM school model articulation process. We will describe the process of articulating and visualizing the essential components of school models. We will also explore the different ways in which a clearly articulated model can be used as a tool to benefit schools.

**Pa** The OSLN-Akron Hub: Leveraging Successful STEM School Models to Impact All

(General) 232, Conv. Center  
**Alison White** (*awhiteua@akron.k12.oh.us*), Ohio STEM Learning Network—Akron Hub, Akron

In this engaging hands-on session, participants will learn about the Ohio STEM Learning Network (OSLN)—Akron Hub, a regional nucleus of STEM activity facilitating partnerships between schools, higher education institutions, businesses, nonprofits, government organizations, and community groups. Participants will be exposed to an array of successful STEM schools that serve as models for the OSLN—Akron Hub, to the benefit of educators, administrators, business and community members, and more. Lastly, participants will leave with ideas and tools to establish STEM partnerships in their regions, based on successful approaches used by the OSLN—Akron Hub and its STEM platform schools.



**10:00–11:00 AM Exhibitor Workshops****Telling Molecular Stories with the Cellular Landscapes of David Goodsell***(Grades 9–College)*

203, Conv. Center

Sponsor: 3D Molecular Designs, LLC

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), 3D Molecular Designs, LLC, Milwaukee, WI

Use amazing landscapes to tell molecular stories, such as “Your Flu Shot in Action.” Students will use these exciting new tools to trace the expression of an antibody gene and synthesis of the antibody protein by ribosomes docked into the endoplasmic reticulum. The protein continues its path to the cell surface via the Golgi and secretory vesicles.

**The “E” in STEM: 3-D STEM Engineering***(Grades 5–College)*

204, Conv. Center

Sponsor: WhiteBox Learning

**Graham Baughman** ([graham@whiteboxlearning.com](mailto:graham@whiteboxlearning.com)), Whitebox Learning, Louisville, KY

The “E” in STEM from WhiteBox Learning is a standards- and web-based 3-D STEM engineering learning system that allows students to engineer and simulate their designs virtually, before building. Students compete virtually, from any browser, 24/7, all around the world... how cool is that?! Gliders2.0, Prosthetics2.0, Dragster2.0, Structures2.0, GreenCar2.0, Rockets2.0, MousetrapCar2.0, Rover2.0.

**Hands-On Engineering Activities for the Classroom***(Grades 9–12)*

205, Conv. Center

Sponsor: The STEM Academy, Inc.

**Alan Gomez** ([info@stem101.org](mailto:info@stem101.org)), The STEM Academy, Inc., Peoria, AZ

Monday morning activities ready for your classroom! This hands-on workshop has classroom activities ready to go that support the NGSS and CCSS. Free access to hundreds of hours of activities and content to all who attend!

**Engineer Excitement in Your Classroom with a Carolina STEM Challenge®***(Grades 6–12)*

207, Conv. Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Catapult, float, and race your way into hands-on activities that can engage your middle school and high school students while fostering both critical thinking and creative problem-solving skills! Join us and experience how Carolina makes it easy to incorporate STEM into your classroom. Free handouts and door prizes!

**Engineering in Elementary Science: Designing with FOSS***(Grades 3–6)*

208, Conv. Center

Sponsor: Delta Education/School Specialty Science–FOSS

**Laurence Malone, Linda De Lucchi, and Erica Beck Spencer**, The Lawrence Hall of Science, University of California, Berkeley

FOSS modules provide students with opportunities to engage in engineering experiences by developing solutions to problems, constructing and evaluating models, and using systems thinking. We’ll describe and display the opportunities to design with science for grades 3–6.

**Vernier’s Digital Tools for STEM Education***(Grades 3–College)*

209, Conv. Center

Sponsor: Vernier Software &amp; Technology

**David Carter** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, OR

Taking STEM education from buzzword to classroom implementation is easier than you think. In this workshop, you will participate in STEM activities—appropriate for multiple age groups—that make use of Vernier’s digital tools. The activities will model approaches you can use to implement STEM education into your classroom.

**Engineer the Tools for Inquiry of Candy Food Dyes***(Grades 8–College)*

211, Conv. Center

Sponsor: Bio-Rad Laboratories

**Leigh Brown** ([Leigh\\_brown@bio-rad.com](mailto:Leigh_brown@bio-rad.com)), Bio-Rad Laboratories, Hercules, CA

What’s in your candy? Join us in this hands-on workshop as we extract colorful food dyes from candy, separate, and identify them using a STEM integrated do-it-yourself electrophoresis box. This inquiry-based activity is a great way to introduce pipetting, electrophoresis, and solution-making skills in addition to chemistry, physics, and engineering concepts.

**Flinn Scientific Presents Activities to Integrate STEM Education***(Grades 6–12)*

212, Conv. Center

Sponsor: Flinn Scientific, Inc.

**Janet Hoekenga** ([jhoekenga@flinnsci.com](mailto:jhoekenga@flinnsci.com)), Flinn Scientific, Inc., Batavia, IL

Learn how to integrate STEM into your curriculum in this hands-on interactive workshop. Join Flinn in a “build-it-yourself” lab that engages students and increases understanding of concepts across science disciplines.

### Forces, Energy, and Motion

(Grades 4–10)

213, Conv. Center

Sponsor: K’NEX Education

**Maureen Kratz**, K’NEX Education, Hatfield, PA

It’s off to the races! Join us as we investigate potential and kinetic energy and force and motion with K’NEX® cars. Gravity, rubber bands, springs, wind, battery motors, and flywheels will power models as we explore complex STEM concepts. How will your car perform? How would you redesign your model to make it a first-place car? Emphasis will be on strategies that empower students to design and complete their own experiments from the teacher’s guide as well as standards-focused STEM concepts.

### 10:30–11:30 AM Invited Panel

#### **A** Success Stories from Administrators

(General)

R01, Conv. Center

Moderator: **Thomas Evans** ([tevans@bcps.org](mailto:tevans@bcps.org)), Eastern Technical High School, Essex, MD

**Edmund Mitzel** ([emitzel@bcps.org](mailto:emitzel@bcps.org)), Pikesville High School, Baltimore, MD

**Kimberly Burton-Regulski** ([kburton@bcps.org](mailto:kburton@bcps.org)) and

**Thomas Michocki** ([tmichocki@bcps.org](mailto:tmichocki@bcps.org)), Eastern Technical High School, Essex, MD

**Amy Bodin** ([amy.bodin@duluth.k12.mn.us](mailto:amy.bodin@duluth.k12.mn.us)), Duluth (MN) Public Schools

**Julie Bauman** ([julieb@scitechmuseum.org](mailto:julieb@scitechmuseum.org)), SciTech STEM Discovery Academy, Aurora, IL

If you’re an administrator who is interested in either developing and/or improving the STEM program in your school or district, this hour of time will be well-spent.

### 10:30–11:30 AM Presentations

#### **Pa** A Coach’s Perspective: Reflections on Supporting Elementary and Middle School Teachers to Integrate Science and Engineering Practices into Daily Instruction

(Grades 3–8)

218, Conv. Center

**Gregory Benedis-Grab** and **Arthur Camins** ([acamins@stevens.edu](mailto:acamins@stevens.edu)), Stevens Institute of Technology, Hoboken, NJ

In this session, we will describe an innovative engineering-focused partnership among Stevens Institute of Technology and 15 New Jersey school districts. Hear about a coaching process where science and engineering education professionals worked with teachers in the classroom on a monthly basis.

#### **E** Plants, Physical Structures, and Everyday Tools: Helping Children Understand the Impact of STEM and the Essential Integration of All STEM Disciplines

(Grades 3–5)

220, Conv. Center

**Donna Knoell** ([dknoell@sbcglobal.net](mailto:dknoell@sbcglobal.net)), Educational Consultant, Overland Park, KS

Attention will be paid to strategies and activities to engage elementary students in STEM applications, including growing plants and constructing physical structures (bridges and ramps). Everyday objects and tools that involve all aspects of STEM will be highlighted. Integration of the STEM disciplines will be modeled in classroom explorations, investigations, and activities.

#### **E** Full STEAM Ahead

(Grades 2–5)

222, Conv. Center

**Dana Joyner**, Hoover (AL) City Schools

**Amanda Stone** ([amstone@hoover.k12.al.us](mailto:amstone@hoover.k12.al.us)), Trace Crossings Elementary School, Birmingham, AL

Come join us as we explore Augmented Reality concepts that are being implemented in elementary classrooms. Examples of Project Based Learning projects that incorporate STEAM (science, technology, engineering, art, and math) will be shared. Walk away with free resources, links, and apps.



**HS** **After the Storm—Engaging in Argument**  
*(Grades 9–College)* 223, Conv. Center  
**Jeff Thomas** (*thomasjed@ccsu.edu*) and **Marsha Bednarski**  
*(bednarskim@ccsu.edu)*, Central Connecticut State University,  
 New Britain  
 Students investigate the effects of climate change on coastal  
 communities, such as extreme weather events (e.g. Hur-  
 ricane Sandy), to write an informed op-ed paper.

**HS** **Teach in 3-D: Using 3-D Printers to Teach Engineer-  
 ing Practices in Grades 6–12 Science Classrooms**  
*(Grades 6–12)* 224, Conv. Center  
**Susie Posnock** (*suspos@d219.org*), Niles North High School,  
 Skokie, IL  
**Kelda Hutson** (*khutson@wthsh.net*), Warren Township High  
 School District #121, Gurnee, IL  
 Curricula connected to the NGSS demands creative and innova-  
 tive tools as well as teachers. 3-D printers are now affordable  
 and the curriculum is free! These 3-D STEM activities can  
 be used in middle school and high school biology, chemistry,  
 and physics classes.

**M** **Using Newer Google Apps to Enhance Science and  
 Engineering Practices in Middle School**  
*(Grades 6–9)* 225, Conv. Center  
**Danielle Spaete**, Pleasant Valley High School, Bettendorf,  
 IA  
 Google Apps promote a variety of STEM practices and for-  
 mative assessment. Students develop valuable collaborative  
 skills. Feedback preserves the process as well as the product.

**M** **Beginning a STEM Program for Students with Special  
 Needs**  
*(Grades 6–8)* 226, Conv. Center  
**Erick McGinley** (*mcginlej@milwaukee.k12.wi.us*), **Nicholas  
 Petersen** (*petersnp@milwaukee.k12.wi.us*), and **Julie Koth**  
*(kothja@mail.milwaukee.k12.wi.us)*, 53rd Street School, Mil-  
 waukee, WI  
 Hear firsthand experiences from a team of middle school  
 educators who began implementing a STEM program tar-  
 geting students in special education, including students with  
 significant and profound disabilities.

**M** **NASA STEM Online Educator Professional Develop-  
 ment Tour**  
*(Grades 4–8)* 227, Conv. Center  
**Steve Culivan** (*stephen.p.culivan@nasa.gov*), NASA Stennis  
 Space Center, Stennis Space Center, MS  
 Explore and experience unique space content. NASA is a  
 leader in exploring Earth and our universe. This session will  
 guide educators on a tour exploring NASA STEM online  
 professional development opportunities.

**HS** **Strategies for STEM Success**  
*(Grades 6–College)* 229, Conv. Center  
**Pearline Williams-Brown** and **Marguerite Sognier**  
*(masognie@utmb.edu)*, The University of Texas Medical Branch  
 at Galveston  
 Hear about strategies used by the Southeast Regional T-  
 STEM Center to achieve school success! Strategies include  
 Project Based Learning, incorporating 21st-century skills,  
 proven instructional strategies, and more!

**M** **The Harnessed Atom: New Ideas, Tools, and Resources  
 for Teaching Nuclear Science and Energy as Middle  
 School STEM Extension**  
*(Grades 6–9)* 230, Conv. Center  
**Marie Westfall**, Oak Ridge Associated Universities, Oak  
 Ridge, TN  
 Walk away with free STEM materials on energy sciences  
 and nuclear energy. Harnessed Atom includes lesson plans,  
 projects, interactive games, hands-on activities, student  
 collaboration, and teacher resources.

**E** **Assessment Tools Designed for Grades 2–5**  
*(Grades 2–5)* 231, Conv. Center  
**Robin Ostefeld** (*robin.ostenfeld@gmail.com*), Shady Hill  
 School, Cambridge, MA  
 This session will highlight some of the assessment tech-  
 niques that have been developed in a grade 4 physical science  
 program. Teachers have traditional ways of testing student  
 understanding and application of content, but what methods  
 are available to STEM teachers who want to assess learning  
 that is much more nuanced?

**HS** **Designing Project-based Units: Keys for Success**  
(Grades 9–12) 232, Conv. Center

**Gail Dickinson** ([dickinson@txstate.edu](mailto:dickinson@txstate.edu)), Texas State University, San Marcos

Let's examine research-based tips for successful design and implementation of project-based science units. Topics include driving questions, rubrics, cross-disciplinary collaborations, and managing groups.

**HS** **Cars: An Easier Way to Drive Home Hard-to-Teach Physical Science (Chemistry) Concepts**

(Grades 7–12) R08, Conv. Center

**Debbie Goodwin** ([nywin@hotmail.com](mailto:nywin@hotmail.com)), Chillicothe High School, Chillicothe, MO

**Andrew Nydam** ([andrewnydam@hotmail.com](mailto:andrewnydam@hotmail.com)), ASM International Foundation, Materials Park, OH

Generate student interest and understanding of STEM with labs and demonstrations that relate automobiles to physical science (chemistry) concepts with CCSS correlations. Take home a CD of labs and information.

**M** **Custom Science e-Textbooks: Create the Perfect Textbook for Your Course!**

(Grades 5–12) R09, Conv. Center

**Amy Bell** ([abell@nido.cl](mailto:abell@nido.cl)), The International School Nido de Aguilas, Lo Barnechea, Chile

Develop your students' STEM learning and literacy by creating an interactive e-textbook that fits your course perfectly AND is tailored for different reading levels.



**10:30–11:30 AM Hands-On Workshops**

**Pa** **STREAM Family Involvement Events**

(Grades P–5/College) 215, Conv. Center

**Jim McDonald** ([jim.mcdonald@cmich.edu](mailto:jim.mcdonald@cmich.edu)), Central Michigan University, Mount Pleasant

This session will describe a partnership between Central Michigan University and area schools, libraries, and museums that present family-based events for parents and children.

**Pr** **Beyond Biology: Exploring Physical Science and Engineering in the Early Education Classroom and Gardens**

(Preschool–Kindergarten) 216, Conv. Center

**Kimberly Brenneman** ([kbrenneman@nieer.org](mailto:kbrenneman@nieer.org)), National Institute for Early Education Research, New Brunswick, NJ

This interactive workshop takes a familiar science theme—gardens—and engages participants in physical science and engineering learning experiences to expand ideas beyond biology for their preschool and kindergarten students.

**M** **Structure vs. Inquiry: Finding the Right Balance to Support STEM in the Classroom**

(Grades 6–8) 228, Conv. Center

**Amanda Solarsh** ([amandasolarsh@gmail.com](mailto:amandasolarsh@gmail.com)) and **Gina Tesoriero** ([ginatezoriero@gmail.com](mailto:ginatezoriero@gmail.com)), Simon Baruch MS104, New York, NY

Learn how to balance structure and open-ended exploration in STEM design challenges to foster a classroom environment that promotes student collaboration and problem-solving skills.

**M** **Bridging STEM into the Core Content Areas**

(Grades 6–9) R02, Conv. Center

**Bryan Turner** ([bryan\\_turner@scps.k12.fl.us](mailto:bryan_turner@scps.k12.fl.us)) and **Sabrina Robinson** ([sabrina\\_robinson@scps.k12.fl.us](mailto:sabrina_robinson@scps.k12.fl.us)), Milwee Middle School, Longwood, FL

Using real-world issues, discover how to integrate cross-curricular STEM projects into science, mathematics, social studies, and language arts.

**M** **Navigate Between Weather and Climate Data Simply**  
(Grades 6–8) R03, Conv. Center

**Matthew Mirabello** ([mmirabello@amnh.org](mailto:mmirabello@amnh.org)), American Museum of Natural History, New York, NY

Use a web-based graphing tool to analyze and interpret weather data, climate change, and patterns in weather and climate. This workshop explores weather and climate data through an online graphing tool that simplifies data visualization so students can focus on data analysis and interpretation.

**M** **Black Holes, Exploding Stars, and Children! Oh My!**  
(Grades 5–8) R04, Conv. Center

**Sara Mitchell** ([Sara.Mitchell@nasa.gov](mailto:Sara.Mitchell@nasa.gov)) and **Sarah Eyer-mann** ([sarah.e.eyermann@nasa.gov](mailto:sarah.e.eyermann@nasa.gov)), Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, MD

Explore the universe within your informal education programming with the hands-on activities of NASA’s Big Explosions and Strong Gravity curriculum for middle school students!

**M** **If They Make It, They Will Learn: The Maker Movement and STEM**

(General) R05, Conv. Center

**Jack Samuelson** ([jsamuelson@wi.rr.com](mailto:jsamuelson@wi.rr.com)), Dr. STEM Express, Wauwatosa, WI

In this hands-on workshop, learn how “Making” can facilitate STEM in the classroom and develop confidence, curiosity, and creativity in your students.

**HS** **Oranges to Oranges**  
(Grades 9–10) R06, Conv. Center

**Christina Crawford**, Rice University, Humble, TX

“Oranges to Oranges” is a biology review activity based on the board game “Apples to Apples.” Come play.

**HS** **Hey, That’s MY Data!**  
(Grades 8–12) R07, Conv. Center

**Jeff Lukens**, Roosevelt High School, Sioux Falls, SD

Developing, planning, carrying out, analyzing, interpreting, constructing, designing, and engaging—all are verbs used in the NGSS “Big Ideas.” Come to this workshop and experience all of them!

**11:30 AM–12:30 PM Exhibitor Workshops**  
**Practice Makes Perfect: Modeling as an NGSS Authentic Practice of Science**

(Grades 9–College) 203, Conv. Center

Sponsor: 3D Molecular Designs, LLC

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), 3D Molecular Designs, LLC, Milwaukee, WI

Explore engaging hands-on physical models of proteins, DNA, and other molecular structures that make the molecular world real for your students. As students explore models, they make connections with basic concepts of biology and chemistry and work together to arrive at a solution to a challenge.

**National Park Adventures with a STEM Twist**  
(Grades 6–12) 204, Conv. Center

Sponsor: Grand Classroom

**Tim Maxwell** ([timmaxwell@grandclassroom.com](mailto:timmaxwell@grandclassroom.com)) and **Billy Payne** ([billypayne@grandclassroom.com](mailto:billypayne@grandclassroom.com)), Grand Classroom, Charlottesville, VA

Hear how Grand Classroom is introducing National Park adventures that include STEM-based visits to engineering and technology companies. See the beauty and science our nation has to offer in the Grand Canyon, Yosemite, and the Pacific Northwest along with visits to companies in Phoenix, the Silicon Valley, and Seattle.

**Electronics for Middle School**  
(Grades 5–8) 208, Conv. Center

Sponsor: Delta Education/School Specialty Science–FOSS

**Linda De Lucchi, Laurence Malone, and Erica Beck Spencer**, The Lawrence Hall of Science, University of California, Berkeley

Students work systematically with electronic components and meters to build circuits, measure and monitor electric properties, and use mathematics and logic to construct meaningful explanations for the powerful interactions taking place in their designed systems. Join us for a STEM experience using digital instrumentation from the FOSS Electronics Course.

CANCELED

### iPad and Wireless Sensors with Vernier

(Grades 3–College) 209, Conv. Center

Sponsor: Vernier Software & Technology

**David Carter** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, OR

Using data-collection technology builds deeper student understanding of critical concepts in science and increases test scores. See how you can use Vernier sensors, including our new Go Wireless™ Temp, to support science inquiry in classrooms using iPads. This technology empowers students to collaboratively collect and independently analyze their data.

### Exploring Machines

(Grades 4–10)

213, Conv. Center

Sponsor: K’NEX Education

**Maureen Kratz**, K’NEX Education, Hatfield, PA

Bring the excitement of hands-on learning to your middle school classroom! Build and investigate a variety of simple machine models, take measurements, and gather data that can be used to determine work input, work output, mechanical advantage, gear ratios, effort forces, resistance forces, and more. The exercises and explorations illustrate engineering and scientifically rich content through the use of models. Applying understandings of these models to real-world examples of machines leads to a better understanding of design and systems of machines in practical use. Standards-focused STEM concepts will guide our exploration.

## 11:45 AM–12:45 PM Presentations

### **E** STEM in Sports: Are You Ready for Some Football?

(Grades 3–5) 220, Conv. Center

**Renee Parrish** ([renee.parrish@polk-fl.net](mailto:renee.parrish@polk-fl.net)), **Penny Lundquist** ([penny.lundquist@polk-fl.net](mailto:penny.lundquist@polk-fl.net)), **Scott Harper** ([scott.harper@polk-fl.net](mailto:scott.harper@polk-fl.net)), **Teresa Negley** ([teresa.negley@polk-fl.net](mailto:teresa.negley@polk-fl.net)), **Belinda Ressel** ([belinda.ressel@polk-fl.net](mailto:belinda.ressel@polk-fl.net)), and **Adam Smith** ([adam.smith@polk-fl.net](mailto:adam.smith@polk-fl.net)), Brigham Academy, Winter Haven, FL

Huddle up to hear from elementary educators on how you can use sports to motivate and engage students through an interdisciplinary STEM unit.

### **HS** Using Grand Challenges to Promote Interdisciplinary Learning

(Grades 8–College)

224, Conv. Center

**Rebecca Stanley** ([rstanley@ncnewschools.org](mailto:rstanley@ncnewschools.org)), North Carolina New Schools, Raleigh

Explore how STEM education, framed around grand challenges, engages students in tackling global issues requiring consideration of the economic, political, and social barriers.

### **M** Citizens in the Curriculum and the Cloud

(Grades 4–8)

225, Conv. Center

**Juliana Texley** ([jtexley@att.net](mailto:jtexley@att.net)), NSTA President-Elect, Boca Raton, FL

Hear about two innovative Citizen Science projects that go beyond the norm—linking to curriculum-rich partnerships and innovative outreach.

### **M** Growing with Water: Hydroponics in the Classroom

(Grades 6–12)

226, Conv. Center

**Tamara Pellien**, Rutgers New Jersey Agricultural Experiment Station, Toms River

Get your hands out of the dirt and into water with “Growing with Water,” an interactive school-based gardening program. Using a hydroponics system, “Growing with Water” takes students from germination to bounty in 3–4 months. Students learn plant nutrition and science, experimental design, and how to grow healthy foods.

### **HS** Modeling Science for the Next Generation

(Grades 9–12) 223, Conv. Center

**Scott Ragan**, North Carolina State University, Raleigh  
Modeling instruction cultivates teachers as experts on the effective use of guided inquiry. Students are better prepared to learn STEM content while developing coherent scientific models in physics, chemistry, and biology.





**M** **Using the iPad in a Science Classroom**  
(Grades K–12) 227, Conv. Center  
**Christa Brummett**, Southern Arkansas University, Magnolia  
Come see why science teachers should be using iPads in the classroom. We will look at classroom management applications and amazing science applications that will revolutionize a classroom! Science apps that will be covered include life science, engineering, Earth science, chemistry, and more. Although not required, bring your iPad if you have one.

**HS** **IScS: An Innovative Integrated Science Program to Light Students' Fire for Science**  
(Grades 9–College) 229, Conv. Center  
**Nicole Crane** and **Harry Ungar** (*haungar@cruzio.com*), Cabrillo College, Aptos, CA  
IScS, the Integrated Science Semester, is a successful NSF-funded five-year project that has integrated biology, chemistry, and physics into a semester-long curriculum. Come learn more.

**M** **“Justin” Time**  
(Grades 5–8) 230, Conv. Center  
**Kathy Kennedy** (*kkenned3@stevens.edu*) and **Adam Scribner** (*jscribne@Stevens.edu*), Stevens Institute of Technology, Hoboken, NJ  
Sample a new activity for your STEM classroom. Learn about an engineering design challenge that engages students in force, motion, and variable testing by designing and building pendulums to keep time to Justin Timberlake songs.

**E** **Developing an Integrated STEM Curriculum on a Budget**  
(Grades 3–5) 231, Conv. Center  
**Laura Mackay** (*laura@texasmackays.org*), **Malissia De Leon**, **Nicole Long** (*nicolelong@ccisd.net*), and **Kelli Mistretta**, Ed White Elementary School, Seabrook, TX  
Come discover how to develop STEM curriculum on a budget. Learn our strategy for development and the units we have developed for upper elementary students.

**HS** **eLABorate with TECHNOlogy**  
(Grades 8–12) R07, Conv. Center  
**Keenan Locklear**, Robeson Early College High School, Lumberton, NC  
Learn to engage students with technology-based activities that are relevant. This session connects literacy and technology in meaningful ways that enhance the educational experience.

**E** **Bugscope: Remote Scanning Electron Microscopy for Classroom Inquiry Practices**  
(Grades 2–8/College) R09, Conv. Center  
**Michele Korb** (*michele.korb@csueastbay.edu*), California State University, East Bay, Hayward  
Bugscope is a remote technology that allows students and teachers free access to Scanning Electron Microscopy (SEM). Engage your students by examining insect samples while controlling the microscope and chatting with entomologists from classroom computers.

## 11:45 AM–12:45 PM Hands-On Workshops

**Pa** **Interactive K–12 Pipeline to STEM College and Career Programs**  
(Grades K–12) 215, Conv. Center  
**Gregory Burnham** (*gdburnham@lubbockisd.org*), Estacado High School, Lubbock, TX  
We will run through three small-scale activities that incorporate engineering design, algebra, and physics to demonstrate their use in competitions among student teams. Discussion centers on BEST Robotics and FIRST Robotics to mentor students into STEM college and career programs. Take home projects and handouts.

**E** **The Magnetic Fields of Engineering and Science: How Engineering Design Challenges Can Inspire Inquiry**  
(Grades K–5) 222, Conv. Center  
**Kristin Sargianis** (*ksargianis@mos.org*), Engineering Is Elementary, Boston, MA  
Participants will engineer magnetic levitation (maglev) vehicles and reflect on how integrating science with engineering promotes authentic inquiry with their students.

**M** **Using the Engineering Design Process to Engage Middle School Students**

(Grades 6–8)

228, Conv. Center

**Krystal Corbett** ([krystal.corbett@cyberinnovationcenter.org](mailto:krystal.corbett@cyberinnovationcenter.org)), Cyber Innovation Center, Bossier City, LA

Experience firsthand how the engineering design process engages grades 6–8 students and how it weaves together multiple disciplines, including science, engineering, mathematics, and liberal arts.

**A** **How the STEM Center Works at Eastern Tech**

(Grades 9–12)

R01, Conv. Center

**Thomas Michocki** ([tmichocki@bcps.org](mailto:tmichocki@bcps.org)), Eastern Technical High School, Essex, MD

Join me for a discussion about how the STEM Center works at Eastern Tech. Open to students before and after school as a peer-tutoring center, the STEM Center is sponsored by the science department, and the peer tutors come from the Science and Math Honor Societies.

**M** **Engage, Explore: Incredible STEM Investigations!**

(Grades 5–8)

R02, Conv. Center

**John Hunt** ([jhunt@mc.edu](mailto:jhunt@mc.edu)), Mississippi College, Clinton

Do you want to be energized? Come use critical thinking and problem-solving strategies to construct/develop and test several physical models. The STEM investigations have all been tested with middle school students and can be easily integrated into a middle school curriculum.

**M** **S.T.E.M. in Skateboarding? Stoked!**

(Grades 4–8)

R03, Conv. Center

**Chérie Farrington** ([cherie@sportssciencefun.com](mailto:cherie@sportssciencefun.com)), Sport-Science Fun, LLC, Reston, VA

Students ollie their way into exploring the engineering of skateboard equipment design, then build a skateboard ramp to see Newton's laws at play!

**E** **NSTA Press® Session: Find STEM in the School Yard with Outdoor Science**



(Grades K–8)

R04, Conv. Center

**Steve Rich** ([bflywriter@comcast.net](mailto:bflywriter@comcast.net)), West Georgia Science Center, Douglasville

Explore STEM in the school yard with NSTA Press® books and find out how birds and students can “engineer” with sticks and stems. Free seeds!



**M** **Student Learning Through Dynamic Mapping: Classroom-based Solutions for Improving Communities**

(Grades 4–College)

R05, Conv. Center

**Shawn Sweeney** ([ssweeney@janegoodall.org](mailto:ssweeney@janegoodall.org)), The Jane Goodall Institute, Vienna, VA

Participants will learn how to use a practice called community mapping to make observations of their local area, map them, and plan a project to improve their community for people, animals, and the environment.

**HS** **AIAA Space Weather Balloon Curriculum Module**

(Grades 9–College)

R06, Conv. Center

**Joan Labay-Marquez**, Curington Elementary School, Boerne, TX

**Edgar Bering** ([eabering@uh.edu](mailto:eabering@uh.edu)), University of Houston, TX

Launch new learning in your classroom and inspire your students to become scientists, engineers, and explorers. This curriculum module gives students a hands-on exploration project to design, build, and launch a high-altitude space weather balloon to collect data in a totally unique environment...the edge of space. Curriculum is free for K–12 teachers who are AIAA Educator members.



**Friday, May 16 8:00 AM–7:00 PM**

Start Time	End Time	Activity/Event Title
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**Saturday, May 17 8:00–10:00 AM**

Start Time	End Time	Activity/Event Title
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**12:30–3:30 PM Exhibits***The Great Hall A, Conv. Center*

Take advantage of this dedicated time to stroll through the exposition picking up tips, product samples, and ideas to spark your imagination.

**1:00–2:00 PM Exhibitor Workshops****Experience the STEM Wi-Fi Classroom: Creating a Success Story for Your School***(Grades 7–College)**203, Conv. Center*

Sponsor: Swift Optical Instruments, Inc.

**Cynthia Syverson-Mercer** ([cynthia@swiftoptical.com](mailto:cynthia@swiftoptical.com)) and **David Doty** ([david@swiftoptical.com](mailto:david@swiftoptical.com)), Swift Optical Instruments, Inc., Schertz, TX

The digital future is here! Experience the STEM classroom firsthand. Learn how Wi-Fi cameras and Wi-Fi microscopes can be used to transform your labs, lesson plans, and activities into digital formats. This workshop will focus on the student learner as well as the teacher presenting in a Wi-Fi STEM environment. BYOD and download the MotiConnect App before attending.

**Solving the Mystery of STEM Using Forensic Science and Digital Microscopy***(Grades 6–12)**208, Conv. Center*

Sponsor: Frey Scientific/School Specialty Science

**Lou Loftin**, Nevada’s Northwest Regional Professional Development Program, Reno

Conduct a number of STEM-focused forensic activities that link scientific investigations with analysis and investigative skills to solve multifaceted “cases” involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows the integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

**Renewable Energy with Vernier***(Grades 4–College)**209, Conv. Center*

Sponsor: KidWind Project

**Michael Arquin** ([michael@kidwind.org](mailto:michael@kidwind.org)) and **Joe Rand** ([joe@kidwind.org](mailto:joe@kidwind.org)), KidWind Project, St. Paul, MN

Through a variety of labs and activities, use wind turbines, solar equipment, and Vernier data logging tools to dig into the complexities of generating energy from renewable sources. This lab is for advanced users of KidWind gear who want to start integrating data collection and advanced topics.

**Teaching STEM Using Agarose Gel Electrophoresis***(Grades 8–College)**211, Conv. Center*

Sponsor: Edvotek Inc.

**Danielle Snowflack** ([info@edvotek.com](mailto:info@edvotek.com)), Edvotek Inc., Washington, DC

In this hands-on workshop, participants will explore four hot topics in biotechnology (DNA fingerprinting, paternity testing, medical diagnostics, and genetically modified organisms) using Agarose gel electrophoresis. Brightly colored dyes are used to simulate DNA fragments, eliminating post-electrophoresis staining and saving you valuable classroom time! Results are analyzed using a semi-logarithmic plot, which employs critical-thinking skills and STEM learning techniques. Free flash drive/T-shirt drawing.

**Introduction to Simple Machines***(Grades 1–5)**213, Conv. Center*

Sponsor: K’NEX Education

**Maureen Kratz**, K’NEX Education, Hatfield, PA

Explore that common expression “simple machines make work easier” and investigate hands-on strategies to help students understand simple machine technologies. Build and use K’NEX® simple machine models and discover that simple machines make work easier by multiplying force and distance as well as changing the direction of force. Emphasis will be on standards-focused STEM concepts related to simple machines.

### 2:30–3:30 PM Exhibitor Workshops

#### Investigating STEM and the NGSS with CPO Science Link™

(Grades 9–12)

208, Conv. Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, NH

CPO Science is proud to unveil its new Link Series of hands-on modules that focus on STEM and NGSS activities with online interactive content. The Energy Car Link module will use our Energy Car and Track along with our Data Collector and photogates to explore motion, force, and energy conservation.

#### Wind Sail Cars

(Grades 1–5)

209, Conv. Center

Sponsor: KidWind Project

**Michael Arquin** ([michael@kidwind.org](mailto:michael@kidwind.org)) and **Joe Rand** ([joe@kidwind.org](mailto:joe@kidwind.org)), KidWind Project, St. Paul, MN

Chart a new course for learning in your classroom. Learn how wind can do work. Come build sail cars and then design sails that can push your car the farthest. This workshop is geared for K–4 educators, but can be used as a first-step hands-on activity for all ages.

#### Renewable Energy

(Grades 5–10)

213, Conv. Center

Sponsor: K’NEX Education

**Maureen Kratz**, K’NEX Education, Hatfield, PA

Explore Going Green renewable energy with your students! It’s designed to address critical STEM concepts and provide instructional models that can enhance students’ understanding of these concepts. Build a model and demonstrate how it can be operated with electricity generated from wind, water, and solar power. Explore other models that complete real-world tasks with these same three renewable power sources.



### 3:00–4:00 PM Presentations

#### **HS** Making Waves: Building Simple Radio Systems

(Grades 9–12)

210, Conv. Center

**Vincent Urbanowski**, Academy of Information Technology & Engineering, Stamford, CT

Find out how you can have your students building radio transmitters and receivers using first principles and simple parts, as they model real-world wireless technology by transmitting and receiving pictures and data.

#### **Pr** Integrating Science, Technology, and Engineering in PreK: STEp Up Your Practice!

(Preschool)

216, Conv. Center

**Betty Zan** ([betty.zan@uni.edu](mailto:betty.zan@uni.edu)), University of Northern Iowa, Cedar Falls

**Daryl Greenfield** ([dgreenfield@miami.edu](mailto:dgreenfield@miami.edu)), University of Miami, Coral Gables, FL

**Kimberly Brenneman** ([kbrenneman@nieer.org](mailto:kbrenneman@nieer.org)), National Institute for Early Education Research, New Brunswick, NJ  
Discover how to transform common “good start” preschool activities into intellectually rigorous, developmentally appropriate STE (science, technology, and engineering) experiences that engage children and deepen their STE understanding.

#### **Pa** STEM Global Learning Perspectives

(Grades 5–12)

218, Conv. Center

**Tracey Simchick** ([tesimchick@gmail.com](mailto:tesimchick@gmail.com)), Erie BOCES, Fredonia, NY

Explore how teaching and travel can intersect to enhance classroom STEM integration. Use virtual field trips, online forums, and collaborative partnerships to bring science to life! Specific examples from my recent trip to Greenland will be shared.

#### **Pa** STEM Professional Development Connections

(Grades 5–8/College)

219, Conv. Center

**Dewayne Morgan**, University System of Maryland, Adelphi

Join me as I share how P–20 partnerships can be used to substantively change the way that STEM professional development is delivered. Take away a set of specific strategies that can be used to create P–20 partnerships and understand how to set specific measurable goals.

**E** **STEM—What Does It Really Look Like in the Classroom?***(Grades K–8)*

220, Conv. Center

**Brian Crosby** ([bcrosby@washoeschools.net](mailto:bcrosby@washoeschools.net)), Nevada's Northwest Regional Professional Development Program, Reno  
You've heard of STEM, and perhaps know something about it. See what it really looks like. Student work, videos, and sample projects will be shown and explained.

**Pa** **Girls Reinventing Our World: Girl Scouts Changing the World Through STEM***(General)*

223, Conv. Center

**Renee Cunningham**, University of Mississippi, Tupelo  
Receive an overview of a partnership between the University of Mississippi and the Heart of the South Girl Scout Council to promote STEM in northern Mississippi. Hear how Girl Scouts are making science and engineering fun and exciting as well as empowering girls in STEM.

**HS** **Interdisciplinary STEM Units—Integrating NGSS Practices and the CCSS***(Grades 6–College)*

224, Conv. Center

**Jeff Thomas** ([thomasjed@ccsu.edu](mailto:thomasjed@ccsu.edu)) and **Marsha Bednarski** ([bednarskim@ccsu.edu](mailto:bednarskim@ccsu.edu)), Central Connecticut State University, New Britain

Hear testimonies from STEM teachers as they developed and implemented their interdisciplinary STEM units that also integrate NGSS science and engineering practices and CCSS.

**M** **Building a Full Head of STEAM***(Grades 5–9)*

225, Conv. Center

**Emily Korn** and **Laureen Mody** ([lmody@ci.stamford.ct.us](mailto:lmody@ci.stamford.ct.us)), Cloonan Middle School, Stamford, CT

In today's urban classrooms, art education is a pathway to teaching the flexible thinking, risk-taking, and creative problem solving needed to solve today's most complex and pressing challenges. Learn how integrating art into the STEM curriculum creates "STEAM" and provides opportunities for greater retention of information, deeper meaning, and creative problem solving through the use of art as a visual language.

**M** **Will It Stand? Seventh-Graders Locate an Oceanfront Home***(Grades 4–9/College)*

226, Conv. Center

**Erin Yacovoni**, Student, Dayton, OH

Hear about a science lesson in which grade 7 students selected a prime oceanfront location to advise a home builder. Exploring the effects of the moon on tides was integrated with an engineering design problem to challenge students to construct real-world connections to science content.

**M** **NASA Engineering Design: The Next Generation of STEM Learning***(Grades 5–8)*

227, Conv. Center

**Steve Culivan** ([stephen.p.culivan@nasa.gov](mailto:stephen.p.culivan@nasa.gov)), NASA Stennis Space Center, Stennis Space Center, MS

Make engineering design empower your STEM curriculum. This session will explore engineering design—an NGSS core idea—using NASA missions, design challenges, and hands-on learning.

**M** **Designing STEM Adventures Using the Legacy Cycle***(Grades 3–8)*

228, Conv. Center

**Margie Hawkins** ([margiebg@gmail.com](mailto:margiebg@gmail.com)), Winfree Bryant Middle School, Lebanon, TN

**Sally Pardue** ([spardue@tntech.edu](mailto:spardue@tntech.edu)), Tennessee Tech University, Cookeville

The Legacy Cycle uses challenges as anchors for learning. Hear how to design exciting, standards-based, real-life STEM challenges for your students.

**M** **Molecular Modeling***(Grades 5–8)*

229, Conv. Center

**Holly Payton**, I.A. Lewis School, Ruston, LA

Make your lessons matter. Enhance middle school students' understanding regarding the structure, behaviors, and interactions of atoms. Studies show there are benefits through guided exploration using molecular modeling software.

**HS** **Energy 101: The Sterling High School Chevy Volt Project**

(Grades 6–College) 230, Conv. Center  
**Dan Whisler** ([whislerd@usd376.com](mailto:whislerd@usd376.com)), Sterling High School, Sterling, KS

Having an electric car as a school vehicle and real-life high school science project? It is at Sterling High School! This STEM project connects students to the real world in a very unique way! Come find out how to plug your school into a similar project.

**A** **Building a Culture of Collegiality and STEM Practice**

(Grades 5–9) 231, Conv. Center  
**Adaliz Gonzalez**, Inwood 52 Intermediate School, New York, NY

During this presentation, a school team of administrators and teachers will share how they collaborate to incorporate best teaching practices and the development of the school’s “STEM” theme academy.

**Pa** **Real-World Externships**

(Grades 5–12) 232, Conv. Center  
**Meghan Reynolds**, Iowa Governor’s STEM Advisory Council, Cedar Falls

Hear about this unique school/business partnership that is opening teachers’ eyes to STEM content and the 21st-century skills needed in the business world. Along with an overview of the program, discussion centers on examples of real-world externships and the classroom ideas developed from those experiences.

**M** **Organizing a Middle School Family STEM Night**

(Grades 5–8/College) R01, Conv. Center  
**Eric Brunsell** ([brunsele@uwosh.edu](mailto:brunsele@uwosh.edu)), University of Wisconsin, Oshkosh

Work with universities or high schools to implement a STEM Night for students and their families. I’ll share logistics, activities, and our impact study.

**HS** **Using Newer Google Apps to Enhance Science and Engineering Practices in High School**

(Grades 9–12) R08, Conv. Center  
**Danielle Spaete**, Pleasant Valley High School, Bettendorf, IA

Google Apps promote a variety of STEM practices and formative assessment. Students develop valuable collaborative skills. Feedback preserves the process as well as the product.

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**3:00–4:00 PM Hands-On Workshops**

**Pa** **Integrated STEM Teacher Education: A Successful Partnership and Innovative Model**

(Grades 6–College) 215, Conv. Center  
**Patricia Simmons** ([patricia\\_simmons@ncsu.edu](mailto:patricia_simmons@ncsu.edu)), 2011–2012 NSTA President, and North Carolina State University, Raleigh

**Vincent DeLuca** ([vwdeluca@ncsu.edu](mailto:vwdeluca@ncsu.edu)), North Carolina State University, Raleigh

Come join us in a robust discussion about how we formed a partnership among the four disciplines and developed an innovative, integrated STEM preservice teacher education model. During the activities, we will model effective STEM teaching behaviors.

**E** **Teaching Science and Engineering Practices in the Elementary Classroom**

(Grades K–8) 221, Conv. Center  
**John Graves**, Montana State University, Bozeman

Emphasis will be placed on ready-to-use activities that focus specifically on the NGSS science and engineering practices and their relationship to STEM education.

**E** **Hands-On Performance Assessment of the CCSS and NGSS: An Effective Formative Assessment Strategy**

(Grades P–9) 222, Conv. Center  
**Deborah Tucker** ([DeborahLT@aol.com](mailto:DeborahLT@aol.com)), Independent Science Education Consultant, Napa, CA

**Grant Gardner** ([grantmgardner@msn.com](mailto:grantmgardner@msn.com)), Assessment Services, Inc., Pepperell, MA

Explore performance assessment and its relationship to students mastering the CCSS ELA and NGSS while engaging in a hands-on performance task.



**M Teaching Thinking While You're Tinkering: Structuring Projects to Introduce "Just in Time" Engineering Tools**

(Grades 6–11)

R02, Conv. Center

**Ella Miesner**, Ann Richards School for Young Women Leaders, Austin, TX

Join me for this hands-on workshop and acquire concrete tools to help structure student projects to move beyond simple random "tinkering" to true "engineering."

**CANCELED**

**M Shaping Engineers and Problem Solvers**

(Grades 5–8)

R03, Conv. Center

**Wendy DeMers** ([2ydnew2@gmail.com](mailto:2ydnew2@gmail.com)), Hynes Charter School, New Orleans, LA

"I can make that better!" Join me for design-based experiences that incorporate readily available materials that enrich teacher repertoires and make engineering opportunities more accessible to students.



**M Heads Up: Building a Better Bicycle Helmet**

(Grades 5–9)

R04, Conv. Center

**Carson Krook**, Dr. Juliet V. Garcia Middle School, Brownsville, TX

This workshop provides participants with an opportunity to "do" engineering as they design a small-scale bicycle helmet to protect a "brain" during a simulated bike crash.

**M Formative Assessment That Works for Middle School Math Teachers**

(Grades 6–9)

R05, Conv. Center

**Anne Tweed**, 2004–2005 NSTA President, and McREL, Denver, CO

When you look at a piece of student work, what does it tell you about a math student's learning? Learn how we are implementing formative assessment processes to provide feedback that moves student learning forward. Activities and handouts!

**HS Analyzing and Interpreting Ground Water and Ice Sheet Data Using Visualizations and Scientific Data Sets**

(Grades 6–12)

R07, Conv. Center

**Hudson Roditi**, American Museum of Natural History, New York, NY

GRACE stands for NASA's Gravity Recovery and Climate Experiment. Engage in visualizations of GRACE scientific data on ice sheets in Greenland and Antarctica to explore how climate change is affecting these regions.

**4:00–5:00 PM Exhibitor Workshops  
STEM Approach to Teaching Electricity and Magnetism**

(Grades 5–12)

208, Conv. Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, NH

Explore how electricity and magnetism are related through hands-on experiences. Apply your knowledge to engineering a wind turbine. Build, test, and revise your model so that it generates as much power as possible. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

**K'NEX® Computer Control/STEM Explorations**

(Grades 4–10)

213, Conv. Center

Sponsor: K'NEX Education

**Maureen Kratz**, K'NEX Education, Hatfield, PA

Build, program, and control K'NEX models! At its simplest, computer control involves using a computer to control electrical devices such as lights, buzzers, and motors. Using the K'NEX computer control software and interface, participants will build models and write programs to control a K'NEX amusement park model using motors, reed switches, magnets, LEDs, and buzzers. Join us for an excellent introduction to programming and control systems using a low-threshold, high-ceiling flow chart programming language. Standards-focused STEM concepts will guide our exploration.

### 4:15–5:15 PM Presentations

#### **E** Launching an Elementary STEM Program

(Grades K–5)

216, Conv. Center

**Kimberly Stilwell**, Grant Project Manager, Blue Springs, MO

**Christine Gibler** ([cgibler@bssd.net](mailto:cgibler@bssd.net)), Blue Springs (MO) School District

Building an elementary STEM program can be an overwhelming thought. Need ideas for how to get started? We'll share our success story and how using *Picture Perfect Science* resources became part of the foundation to a successful implementation. Resources used to enhance teacher enthusiasm and content knowledge will be shared. Participants will leave with ideas on how to start an elementary STEM program and our website link to resources, including an online science magazine with literature recommendations, instructional vignettes, useful websites, and activities that can be used in the classroom next week.



#### **HS** Broadening Participation of SBIR/STTR Research Experiences for Secondary Students

(Grades 9–College)

223, Conv. Center

**Steven Griffin** ([sgriffin@einsteinfellow.trianglecoalition.org](mailto:sgriffin@einsteinfellow.trianglecoalition.org)), Triangle Coalition for STEM Education, Arlington, VA

Innovative research opportunities for high school students and teachers bring STEM to life through grants awarded by the National Science Foundation. Through collaborative partnerships, Small Business Innovative Research and Small Business Technology Transfer grantees hope to motivate more young people into considering a vocation in a STEM-related field.

#### **Pa** Real STEM: Scientific Research for Rural Georgia High School Students

(Grades 6–College)

217, Conv. Center

**Deborah Walker** ([dwalker@georgiasouthern.edu](mailto:dwalker@georgiasouthern.edu)), **Robert Mayes** ([rmayes@georgiasouthern.edu](mailto:rmayes@georgiasouthern.edu)), and **Raushanah Oglesby** ([ro00320@georgiasouthern.edu](mailto:ro00320@georgiasouthern.edu)), Georgia Southern University, Statesboro

This is the story of creating a STEM research experience for students through a partnership between research institutes, university faculty, and high school teachers.

#### **Pa** Connecting Local Youth with University Students Through STEM

(Grades 4–8/College)

218, Conv. Center

**Jennifer Eustaquio**, Stanford University, Stanford, CA

Hear how one university science outreach program aims for excellence while addressing the needs of community partners, college students, the university, and school-aged students.

#### **Pr** How Is a Poet Like a Scientist? A + STEM Connects Literacy and Science

(Grades K–3)

220, Conv. Center

**Sylvia Vardell** ([svardell@twu.edu](mailto:svardell@twu.edu)), Texas Woman's University, Denton

Linking poetry and science offers opportunities to develop both literacy and content knowledge with an interdisciplinary approach that integrates both NGSS and CCSS skills.

#### **M** Whole-School STEM: New Tools for Student-centered Learning

(Grades 5–8)

225, Conv. Center

**Melvin Goodwin** ([mgoodwi8@bellsouth.net](mailto:mgoodwi8@bellsouth.net)) and **Meaghan Cooper** ([meaghan\\_cooper@charleston.k12.sc.us](mailto:meaghan_cooper@charleston.k12.sc.us)), Laing Middle School of Science and Technology, Mount Pleasant, SC

Discussion centers on how STEM-based activities and learning environments are used to enhance student engagement and academic performance across an entire middle school curriculum.

#### **M** From Mistakes to Mastery—Using Scientific Inquiry for Better Learning and Teaching

(Grades 5–9/College)

226, Conv. Center

**Dwayne Morgan**, University System of Maryland, Adelphi

Join an interactive discussion on maximizing STEM student engagement and learning in the middle grades. We will examine the role of misconceptions and misunderstandings while helping teachers use scientific inquiry teaching strategies in all areas of instruction.

**M** **Smart STEM Targets Aim for Student Success**  
 (Grades 6–9) 227, Conv. Center  
**Sally Seignious**, Moultrie Middle School, Mount Pleasant, SC

The Smart STEM Target program has three tiers: real-world assignments, teacher choices, and student choices. Enable yourself to lift ALL students beyond the NGSS, while reaching the struggling students. This session provides step-by-step training and ways to launch your own program.

**CANCELED**

**M** **Innovation in STEM Learning: Going Green! Middle Schoolers Out to Save the World (MSOSW)**  
 (Grades 6–8) 228, Conv. Center  
**Rhonda Christensen** ([rhonda.christensen@gmail.com](mailto:rhonda.christensen@gmail.com)), University of North Texas, Denton

Researchers, teachers, and middle school students from the NSF-funded Going Green! Project will demonstrate stand-by power-monitoring activities and present research findings from the project.

**M** **Coding Computer Games to Motivate Middle School Science Students**  
 (Grades 5–9) 229, Conv. Center  
**Joanne Barrett** ([jbarrett@oda.edu](mailto:jbarrett@oda.edu)), The Out-of-Door Academy, Sarasota, FL

Teach computer science and programming within your physical science curriculum by incorporating the building of simulations, models, and games with Scratch. Lesson plans specific to an eighth-grade physical science course will be shared.

**A** **Implement and Fund a Collaborative, Interdisciplinary STEM Program Within Master Schedule** (Grades 6–12) 231, Conv. Center  
**Lou Randall** and **Juan Cabral**, Citrus Hill High School, Perris, CA

Hear about our aquaponics program that incorporates a vertical master schedule strategy organized by class period and course discipline. This interdisciplinary STEM program using engineering as a tool to integrate science, technology, and math was named a 2013 CSBA Golden Bell Award winner.

**A** **Building Effective STEM Partnerships**  
 (Grades K–12) 232, Conv. Center  
**Adaliz Gonzalez** ([ms.gonzalez@inwood52.org](mailto:ms.gonzalez@inwood52.org)) and **Salvador Fernandez** ([SFernan@schools.nyc.gov](mailto:SFernan@schools.nyc.gov)), Inwood 52 Intermediate School, New York, NY

Join a team of educators and administrators as they share their experiences creating a network of schools that meet regularly to share best teaching practices, discuss STEM lesson planning aligned to CCSS, and conduct inter-school visitations.

**HS** **Engineering Their World**  
 (Grades 9–12) R01, Conv. Center  
**Chris Campbell** ([ccampbell@lincolnschools.org](mailto:ccampbell@lincolnschools.org)), Simsboro High School, Simsboro, LA

Simsboro High School implemented the Engineering Your World course for 11th-graders. Come hear our challenges and successes from the students in the class. Sixteen of the 18 students in the class are females.



4:15–5:15 PM Hands-On Workshops

**HS** **Making Infections Infectious**  
(Grades 7–10) *215, Conv. Center*  
**Christina Crawford**, Rice University, Humble, TX  
Germinate new learning in your classroom. Engage in a virus role-playing activity that can reach visual, audio, and kinesthetic learners. Students employ active learning as they embark on viral hunt for a specific cell to infect and learn about various methods of viral replication.

**E** **Full STEAM Ahead! Integrating Music Instruction into STEM Hands-On Projects**  
(Grades 3–6) *221, Conv. Center*  
**Kenneth Graves**, Teachers College, Columbia University, New York, NY  
“STEAM” technology-rich hands-on projects foster creative problem solving and innovation. This hands-on workshop demonstrates how the arts (“A”) can deepen students’ understanding of STEM concepts.

**Pr** **Sailing Through STEM! Seamlessly Integrating Engineering and Math for Elementary Students**  
(Grades 1–5) *222, Conv. Center*  
**Kristin Sargianis** (*ksargianis@mos.org*), Engineering Is Elementary, Boston, MA  
This hands-on workshop will explore the integration of engineering with the *Common Core State Standards, Mathematics*. Participants will consider meaningful ways to integrate math while they engineer sails to catch the wind.

**M** **Can Venice Be Saved from Sea-Level Rise?**  
(Grades 6–9) *R02, Conv. Center*  
**Lovelle Ruggiero** (*lovelruggiero@mac.com*), Retired Educator, New Rochelle, NY  
The Venetians have sustained the Lagoon ecosystem and fisheries for centuries. Will sea-level rise threaten Venice? Can sustainability reign even in the 21st century?

**M** **Origami in Science and Engineering**  
(Grades 6–8) *R03, Conv. Center*  
**Diane Maddox** (*dmaddox@bluevalleyk12.org*), Leewood Middle School, Leewood, KS  
Unfold new learning in your classroom. Engage your students in science and engineering through origami. Discover how origami is used in heart stints, airbags, satellite deployment, and more. Activities and resources provided.



**M** **Beginners Guide: Engaging Teachers in STEM Projects**  
(Grades 4–8) *R04, Conv. Center*  
**Andrea Bennett**, Pickett Academy, Toledo, OH  
LEADERS stands for Leadership for Educators: Academy for Driving Economic Revitalization in Science. Join Teacher LEADERS from an urban district as they showcase a professional development example that illustrates how Project Based Learning and the NGSS can be incorporated into a STEM project.

**M** **Family STEM Night: Creating a Successful Experience**  
(Grades 5–9) *R05, Conv. Center*  
**Paul Ridgway** (*pridgway@eb.com*), Encyclopaedia Britannica, Inc., Chicago, IL  
Join me as I review both “opener” activities as well as “main event” activities that make a connection between science and math while exploring engineering topics. Discussion includes strategizing on how to gain attendance.

**HS** **Analyzing and Interpreting Earthquake Data to Assess Earthquake Risk**  
(Grades 6–12) *R07, Conv. Center*  
**Hudson Roditi**, American Museum of Natural History, New York, NY  
Engage in an activity using IRIS (Incorporated Research Institutions for Seismology) earthquake data to explore the characteristics of different types of tectonic plate interactions that occur in the Bangladesh region and assess earthquake risk.

### 5:30 PM Networking Socials

Opportunities for networking, visiting, and exploring are being offered tonight for the local venues/sites listed below. Thanks to all of our volunteers and facilities for making these opportunities available.

*Note:* ALL networking opportunities listed below are free of charge to forum registrants (with proof of badge). As a result of limited capacities, however, you must sign up or obtain tickets in ADVANCE of Thursday evening. In order to do so, please visit the Louisiana Science Teachers Association (LSTA)/Louisiana Association of Math Teachers (LATM) joint booth in the registration area of the Convention Center.

#### ***French Quarter Nature Walk***

Take an evening walk along the Mississippi River and through parts of the French Quarter. We will explore why New Orleans is where it is, how it exists here, and where it may be going. Our tour will start with a leisurely stroll along the river front to Jackson Square. Then, we will descend onto the streets of the French Quarter to observe the wildlife and other sites along our path.

Remember to wear comfortable walking shoes and bring a light sweater/jacket as the breeze along the river may be on the chilly side.

The group will gather at the LSTA/LATM booth no later than 5:30 PM on Thursday for an immediate departure. Please be prompt. Group size is limited to 20; minimum attendance is 5.



#### ***Audubon Aquarium of the Americas***

**Showtime: 6:00 PM** (45–50 minutes in length)

Participants of the NSTA STEM Forum are invited to a special screening of the Audubon-produced IMAX film *Hurricane on the Bayou* at the Entergy IMAX Theater. This film tells the story of Louisiana's disappearing coast, the impact of hurricane Katrina, and why the coast along with the unique animals, people, and cultures that call it home, are worth fighting for.

Participants attending the screening will receive a copy of the film's companion educator guide.

Sign up is required at the LSTA/LATM booth where tickets will be distributed; group size is limited.

The IMAX Theater is located at the Audubon Aquarium of the Americas at the foot of Canal Street. To get to the theater, take Canal Street heading toward the Mississippi River. As you cross the streetcar tracks next to the Ferry Landing, you will see the aquarium building. Walk past the aquarium entrance and the next large entrance to the building will be the IMAX Theater.

#### ***The National WWII Museum***

**Showtime: 6:00 PM** (48-minute show length)

The National WWII Museum offers a complimentary showing of *Beyond All Boundaries* to NSTA STEM Forum attendees. Showing exclusively in The National WWII Museum's Solomon Victory Theater, *Beyond All Boundaries* is a 4-D journey through the war that changed the world. Narrated by executive producer Tom Hanks, *Beyond All Boundaries* features dazzling effects, CGI animation, multi-layered environments, and first-person accounts from the trenches to the Home Front read by Brad Pitt, Tobey Maguire, Gary Sinise, Patricia Clarkson, Wendell Pierce, and more.

Sign up is required at the LSTA/LATM booth where tickets will be distributed; group size is limited.

The museum is located at 945 Magazine Street. Walking directions from the Convention Center: Head south on Convention Center Boulevard, turn right on Andrew Higgins and continue for approximately four blocks, cross Magazine Street, and the Solomon Victory Theatre will be to your left, just past the museum corner store.

*Special Note:* The WWII Museum has made an additional offer of a \$2 DISCOUNT OFF MUSEUM ADMISSION FOR ADULTS by simply showing your STEM FORUM BADGE at the ticket counter during other days/times of the forum week other than Thursday evening, when there is no charge.)



—Photo courtesy of Jeff Anding/New Orleans Convention & Visitors Bureau

**8:00–9:00 AM Invited Panels**

**Pa** **How Can STEM Partnerships Support Students and Teachers Doing Science and Engineering Projects?**

(General) R02–R05, Conv. Center

Moderator: **Jim Short** ([jshort@amnh.org](mailto:jshort@amnh.org)), American Museum of Natural History, New York NY

**Tara Chudoba** ([tchudoba@nysci.org](mailto:tchudoba@nysci.org)), New York Hall of Science, Queens

**Frederic Bertley** ([fbertley@fi.edu](mailto:fbertley@fi.edu)), The Franklin Institute, Philadelphia, PA

**Nicole Kowrach** ([nicole.kowrach@msichicago.org](mailto:nicole.kowrach@msichicago.org)), Museum of Science and Industry, Chicago, IL

**Jay Holmes** ([jholmes@amnh.org](mailto:jholmes@amnh.org)), American Museum of Natural History, New York, NY

This panel will share different approaches to formal/informal programs focused on science and engineering practices. The panel will include different perspectives about how professional development providers at museums and science centers, teacher leaders, and school administrators are working together to improve student learning. Panelists will discuss questions such as how can the assets of informal science institutions be leveraged to support the curriculum in schools, what resources and support do teachers need to engage in Project-Based Learning with their students, and what is the role of school administrators in developing partnerships with organizations outside the school system? Together, the panel will provide a comprehensive overview of how partners working inside and outside the school system can improve teachers' practice and students' learning.

**How Do I Know If My STEM School Is Successful? STEM Metrics and Benchmarks**

(General) R06–R09, Conv. Center

Organizer/Moderator: **Jeanne Century** ([jcentury@uchicago.edu](mailto:jcentury@uchicago.edu)), The University of Chicago, IL

**Scott Bennett** ([sbennett@reyn.org](mailto:sbennett@reyn.org)), eSTEM Academy, Reynoldsburg, OH

**Melanie LaForce** ([laforce@uchicago.edu](mailto:laforce@uchicago.edu)), Outlier Research & Evaluation, Chicago, IL

**Reo Pruiett** ([rpruiett@cftexas.org](mailto:rpruiett@cftexas.org)), Educate Texas, Dallas

**Alison White** ([awhiteua@akron.k12.oh.us](mailto:awhiteua@akron.k12.oh.us)), Ohio STEM Learning Network–Akron Hub, Akron

The metrics and benchmarks panel will share a range of perspectives on how teachers, school leaders, and policy-makers can evaluate STEM school activities and progress. Panelists will discuss research findings about the core components of inclusive STEM high schools across the nation, as well as state-level efforts to create and use rubrics that define and measure successful STEM education. In addition, panelists will describe their personal experiences with the development of STEM education as teachers and administrators. Together, the panel will provide a comprehensive look at how new and established STEM educators can develop and evaluate their work and schools.



### 9:15–10:15 AM Panel Workshops

#### **Pa** Urban Advantage: Formal-Informal Science Education Partners Working Together in STEM Education

(General) 210, Conv. Center

**Jay Holmes** (*jholmes@amnh.org*) and **Jim Short** (*jshort@amnh.org*), American Museum of Natural History, New York, NY

This workshop presents how the Urban Advantage program in New York City has developed an effective partnership between eight informal science education institutions and the New York City school system to support student investigations and STEM education.

#### **Pa** The Museum of Science and Industry's C.A.S.E. Model

(General) 215, Conv. Center

**Elsie Ovrahim** (*elsie.ovrahim@msichicago.org*), Museum of Science and Industry, Chicago, IL

Join me for an overview of MSI's Center for the Advancement of Science Education, with a special focus on in-school and out-of-school STEM support.

#### **Pa** Science Museum as Catalyst for Bringing Design and Engineering Practices into the Classroom

(General) 216, Conv. Center

**Scott Wayne Indiana** (*sindiana@nysci.org*), New York Hall of Science, Queens

**Amanda Solarsh** (*amandasolarsh@gmail.com*) and **Gina Tesoriero** (*ginatesoriero@gmail.com*), Simon Baruch MS104, New York, NY

NYSCI museum educators and teachers share resources from Design Lab, a museum-based innovation laboratory for bringing engineering design into the classroom to meet the NGSS. These resources include a suite of dynamic curricular resources, digital tools, and professional development experiences that inspire children to engage with STEM concepts in the context of design problems children find worth solving, such as forced perspective photography projects involving proportional reasoning. The workshop will offer strategies and insights into how museums and teachers can build bridges between formal and informal education to promote innovative and lasting classroom practices that support the standards.

#### **Pa** Science Museum/School Partnerships: A Blueprint to Success

(General) 221, Conv. Center

**Frederic Bertley** (*fbertley@fi.edu*), The Franklin Institute, Philadelphia, PA

Leveraging the model of The Franklin Institute's partnership school, Science Leadership Academy, participants in this workshop will learn about successes and pitfalls of museum partnership schools. Science Leadership Academy is an inquiry-driven, project-based public magnet high school founded by The Franklin Institute. The workshop will focus primarily on the science museum side of the partnership and what contributions science centers can provide to formal STEM education arenas. The workshop will also discuss how The Franklin Institute "Science Leadership Academy" model has been leveraged to expand locally, regionally, and internationally.

#### **An Introduction to STEM School Model Articulation**

(General) 228, Conv. Center

**Heather King** (*hking@uchicago.edu*) and **Melanie LaForce** (*laforce@uchicago.edu*), Outlier Research & Evaluation, Chicago, IL

**Jeanne Century** (*jcentury@uchicago.edu*), The University of Chicago, IL

This workshop will provide an understanding of the STEM school model articulation process. We will describe the process of articulating and visualizing the essential components of school models. We will also explore the different ways in which a clearly articulated model can be used as a tool to benefit schools.

#### **Pa** The OSLN–Akron Hub: Leveraging Successful STEM School Models to Impact All

(General) 232, Conv. Center

**Alison White** (*awhiteua@akron.k12.oh.us*), Ohio STEM Learning Network–Akron Hub, Akron

In this engaging hands-on session, participants will learn about the Ohio STEM Learning Network (OSLN)–Akron Hub, a regional nucleus of STEM activity facilitating partnerships between schools, higher education institutions, businesses, nonprofits, government organizations, and community groups. Participants will be exposed to an array of successful STEM schools that serve as models for the OSLN–Akron Hub, to the benefit of educators, administrators, business and community members, and more. Lastly, participants will leave with ideas and tools to establish STEM partnerships in their regions, based on successful approaches used by the OSLN–Akron Hub and its STEM platform schools.



**10:00–11:00 AM Exhibitor Workshops****Be the First to Test Our Dynamic DNA Discovery Kit***(Grades 9–College)*

203, Conv. Center

Sponsor: 3D Molecular Designs, LLC

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), **Diane Herman** ([diane.herman@3dmoleculardesigns.com](mailto:diane.herman@3dmoleculardesigns.com)), and **Heather Ryan** ([heather.ryan@3dmoleculardesigns.com](mailto:heather.ryan@3dmoleculardesigns.com)), 3D Molecular Designs, LLC, Milwaukee, WI

Untwist, unzip and replicate, or transcribe DNA with this atomically accurate DNA model that transforms from the iconic double helix into a ladder. Join us as we use nylon prototypes of DNA that feature the accurate atomic structure of nucleotides and discuss results. Participation limited.

**The “E” in STEM: 3-D STEM Engineering***(Grades 5–College)*

204, Conv. Center

Sponsor: WhiteBox Learning

**Graham Baughman** ([graham@whiteboxlearning.com](mailto:graham@whiteboxlearning.com)), Whitebox Learning, Louisville, KY

The “E” in STEM from WhiteBox Learning is a standards- and web-based 3-D STEM engineering learning system that allows students to engineer and simulate their designs virtually, before building. Students compete virtually, from any browser, 24/7, all around the world... how cool is that?! Gliders2.0, Prosthetics2.0, Dragster2.0, Structures2.0, GreenCar2.0, Rockets2.0, MousetrapCar2.0, Rover2.0.

**Hands-On Engineering Activities for the Classroom***(Grades 6–8)*

205, Conv. Center

Sponsor: The STEM Academy, Inc.

**Alan Gomez** ([info@stem101.org](mailto:info@stem101.org)), The STEM Academy, Inc., Peoria, AZ

Monday morning activities ready for your classroom! This hands-on workshop has classroom activities ready to go that support the NGSS and CCSS. Free access to hundreds of hours of activities and content to all who attend!

**Focus and Explore Wave Energy and STEM Education K–8***(Grades K–8)*

207, Conv. Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Focus on getting started with STEM education while effectively teaching the *Next Generation Science Standards* through inquiry-based practices instruction. Explore how to prepare your students for future careers in the 21st-century workforce and ensure effective achievement. Leave with tools to accelerate your STEM journey.

**Building an Electric Motor the STEM Way with CPO Science***(General)*

208, Conv. Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, NH

Use the highly versatile CPO Science Electric Motor to change variables in a hands-on learning environment. We'll cover electromagnets, permanent magnets, commutators, coils, and rotational mass while employing the engineering cycle. Through observation, measurement, and experimentation, participants will design and build motors to spin at specific rates—a true STEM learning activity.

**Evolving Switches, Evolving Bodies: A Story of Gene Regulation and Evolution***(Grades 9–College)*

209, Conv. Center

Sponsor: Howard Hughes Medical Institute

**Jennifer Barnes**, Woodstock High School, Woodstock, GA

The story of the adaptation of stickleback fish to freshwater environments can teach key evolutionary concepts, including links to genetics and gene regulation. Learn how genes and genetic switches involved in the evolution of body structures are identified. Receive HHMI's free classroom-ready resources adapted for high school and college courses.

**Engineer the Tools for Inquiry of Candy Food Dyes***(Grades 8–College)*

211, Conv. Center

Sponsor: Bio-Rad Laboratories

**Leigh Brown** ([Leigh\\_brown@bio-rad.com](mailto:Leigh_brown@bio-rad.com)), Bio-Rad Laboratories, Hercules, CA

What's in your candy? Extract the colorful food dyes from candy and separate them on a do-it-yourself agarose electrophoresis box to identify which dyes were used to make them so appealing. This inquiry-based activity makes for a great skills lab by teaching pipetting, gel electrophoresis, and making solutions with stunning results. Turn this into a complete STEM activity by building your own horizontal electrophoresis box, allowing your students to investigate the science and engineering behind a workhorse in the biotech lab.

### The STEM Design Challenge

(Grades 4–8)

212, Conv. Center

Sponsor: Fisher Science Education

**Robert Marshall** ([Robert.Marshall@thermofisher.com](mailto:Robert.Marshall@thermofisher.com)), Carnegie Science Center, Pittsburgh, PA

First, use inquiry and scientific investigations to answer testable questions about force, energy, and motion. Then, solve an energy problem using creative and realistic world processes. Finally, support your understanding with team competition. You'll be surprised at how you reach conclusions and what tools you'll learn for your classroom.

### Exploring Machines

(Grades 4–10)

213, Conv. Center

Sponsor: K'NEX Education

**Maureen Kratz**, K'NEX Education, Hatfield, PA

Bring the excitement of hands-on learning to your middle school classroom! Build and investigate a variety of simple machine models, take measurements, and gather data that can be used to determine work input, work output, mechanical advantage, gear ratios, effort forces, resistance forces, and more. The exercises and explorations illustrate engineering and scientifically rich content through the use of models. Applying understandings of these models to real-world examples of machines leads to a better understanding of design and systems of machines in practical use. Standards-focused STEM concepts will guide our exploration.

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### 10:30–11:30 AM Presentations

#### **Pa** Analysis and Critique of the East Tennessee State University (ETSU) STEM Innovation Hub

(College)

215, Conv. Center

**Timothy Surrette**, University of Cincinnati, OH

Hear about ETSU STEM Innovation Hub and its efforts to interconnect K–12 schools, higher education institutions, businesses, and community organizations to design STEM learning experiences.

#### **Pa** Texas–STEM Coalition: Partnerships for Success

(General)

217, Conv. Center

**Marguerite Sognier** ([masognie@utmb.edu](mailto:masognie@utmb.edu)), The University of Texas Medical Branch at Galveston

Join me as I share strategies used by a unique partnership coordinated by Educate Texas and funded by the Texas Education Agency to address STEM education throughout the state of Texas. The Texas–STEM Coalition leverages its network of partnerships, expertise, resources, and experiences to prepare Texas students to thrive in a 21st-century global economy.

#### **Pa** How Stamford Became STEMford for the Day!

(General)

218, Conv. Center

**Carrie Chiappetta** ([cchiappetta@ci.stamford.ct.us](mailto:cchiappetta@ci.stamford.ct.us)), **Sidney Watson** ([swatson@stamfordCT.gov](mailto:swatson@stamfordCT.gov)), **Elizabeth Eiseman** ([beiseman@ci.stamford.ct.us](mailto:beiseman@ci.stamford.ct.us)), and **Alec Iogman** ([Ologman@StamfordCT.gov](mailto:Ologman@StamfordCT.gov)), Stamford (CT) Public Schools

**Joseph Lennon** ([jlennon@ci.stamford.ct.us](mailto:jlennon@ci.stamford.ct.us)) and **David Edelson** ([dedelson@stamfordct.gov](mailto:dedelson@stamfordct.gov)), Turn of River Middle School, Stamford, CT

Come see how one urban school district worked together with the community to change the city from Stamford to STEMford, Connecticut, for the day!

#### **Pa** Climate Change—Blending NGSS Science and Engineering Practices

(Grades 6–12)

219, Conv. Center

**Jeff Thomas** ([thomasjed@ccsu.edu](mailto:thomasjed@ccsu.edu)) and **Marsha Bednarski** ([bednarskim@ccsu.edu](mailto:bednarskim@ccsu.edu)), Central Connecticut State University, New Britain

Hear about a two-part professional development module—Mitigating the Effects of Climate Change—that seamlessly blends a science-oriented activity with an engineering-oriented one to address this relevant real-world issue. This module has been implemented with high school students.

**E** **How to Implement an Effective STEM Program in Your School***(Grades 3–5)*

220, Conv. Center

**Linda Schwerer** ([lschwerer@pinellasacademy.com](mailto:lschwerer@pinellasacademy.com)), Charter School Associates, Coral Springs, FL

Learn how to build a local and national platform of STEM supporters and shape interdisciplinary learning teams. Analyze student data and work using a common rubric. Actual STEM modules and projects will be available.

**HS** **Engineering Your Instruction***(Grades 7–12)*

224, Conv. Center

**Bev DeVore-Wedding** ([bdevorewedding@gmail.com](mailto:bdevorewedding@gmail.com)), Meeker High School, Meeker, CO

Bring your own lessons or borrow from prepared lessons available at this session, which will show you how to adapt engineering practices into your instruction.

**M** **Using Technology and Flipped Learning to Engage Students in Improving Their Community***(Grades 5–12)*

227, Conv. Center

**Shawn Sweeney** ([ssweeney@janegoodall.org](mailto:ssweeney@janegoodall.org)), The Jane Goodall Institute, Vienna, VA

Hear how we have made use of technology and flipped learning to not only improve student learning outcomes, but also help students apply their classroom learning to a service learning campaign.

**M** **Finding Time for STEM***(Grades 6–8)*

228, Conv. Center

**Deborah Amendola**, Woodrow Wilson Middle School, Erie, PA

Come find out how Woodrow Wilson Middle School created a schedule that incorporated STEM education for each student into the school day. Hear where we started and how we arrived at where we are today.

**M** **After-School STEM Clubs: Winning in Overtime***(Grades 1–12)*

229, Conv. Center

**Laurie Ilgenfritz**, STARBASE Louisiana, Barksdale Air Force Base

Based on the success of the STARBASE Louisiana 2.0 program, participants will take away ideas for starting a STEM-based after-school club in their community.

**M** **Transform Traditional Lessons into STEM Activities with Pizzazz!***(Grades 6–9)*

230, Conv. Center

**Gail Dickinson** ([gdickinson@madison-schools.com](mailto:gdickinson@madison-schools.com)), Germantown Middle School, Madison, MS

Join in the fun as we transform traditional “humdrum” lessons into challenging STEM problem-solving activities. Projects include Snack Attack and Creative iPhone Noises.

**HS** **Increasing Student Understanding of Science Practices Through Technology***(Grades 9–College)*

R09, Conv. Center

**Dolores Gende** ([doloresgende@yahoo.com](mailto:doloresgende@yahoo.com)), Parish Episcopal School, Dallas, TX

Learn how integrating different forms of technology can promote students’ understanding of science practices in AP Physics as they investigate conceptually challenging questions.

### 10:30–11:30 AM Hands-On Workshops

#### **HS** NASA Visualization Explorer Stories in the Classroom Using Mobile Devices and the Web

(Grades 6–College) 210, Conv. Center

**Theresa Schwerin**, Institute for Global Environmental Strategies, Arlington, VA

Bring your iPad, mobile device, and/or laptop to explore NASA's Visualization Explorer—science stories using real science data of Earth, Sun, planets, and the universe.

#### **A** Creating and Sustaining the Effective Integrated STEM Culture in K–5

(Grades P–5) 232, Conv. Center

**Liz Parry**, North Carolina State University, Raleigh

Creating and sustaining a culture of integrated STEM in K–5 relies on a number of key factors, especially administration. Join me for activities, ideas, lessons learned, and results.

#### **HS** Cultivating the STEM Mind-set: Transforming Spoon-fed Learners into Free-range Problem Solvers

(Grades 9–College) R01, Conv. Center

**Duruhan Badraslioglu**, Bullis School, Potomac, MD

Our five-step Problem-Based Learning method offers an effective strategy in transforming students into free-range thinkers who are capable of offering practical solutions to scientific challenges.

#### **M** Forces, Motion, and the Solar System

(Grades 6–9) R03, Conv. Center

**Adaliz Gonzalez** ([ms.gonzalez@inwood52.org](mailto:ms.gonzalez@inwood52.org)), Inwood 52 Intermediate School, New York, NY

Come enjoy an activity in which students will explain and draw how forces and motion keep planets revolving around the Sun.

#### **M** Use a Data Set to Foster Understanding of Ecology, Ecosystems, and Biological Invasions

(Grades 6–10) R04, Conv. Center

**Jay Holmes**, American Museum of Natural History, New York, NY

Use a web-based graphing tool to analyze and interpret ecology data and the long-term impact of the zebra mussel invasion on the Hudson River ecosystem. This workshop explores a 20-year ecological data set through an online graphing tool that simplifies data visualization so students can focus on analysis and interpretation.

#### **Pr** Growing Up Wild: Hitting All of the Elements of STEM

(Grades P–2/College) R06, Conv. Center

**Jim McDonald** ([jim.mcdonald@cmich.edu](mailto:jim.mcdonald@cmich.edu)), Central Michigan University, Mount Pleasant

Find out how the Growing Up Wild curriculum helps to address the science and engineering practices of the NGSS. Designed for children ages 3–7, join me and hear about two activities with worms and spiders.

#### **Pr** Let's S.A.I.L. (Science Arts Integrated in Literacy)

(Grades K–3) 216, Conv. Center

**Patrice Caldwell**, North Springs Elementary School, Columbia, SC

Think about your favorite book—how can literacy be a springboard for creating a community of science learners. In this hands-on workshop, discover how to integrate science and literacy in a natural way that develops students' interest in science and enhances development of their reading, writing, and communication skills. Take home a packet of science and literacy activities based on national science standards and the CCSS, ELA.

#### **E** Growing Through STEM

(Grades 3–6) 221, Conv. Center

**Sara Rowan**, Randolph Elementary School, Crozier, VA

Students acquire skills for the global workplace through design briefs and guided portfolios in the elementary classroom. Public speaking, collaboration, time management, organization, and creativity are all skills that are honed through the project-based, hands-on learning that takes place in an engaging environment. This make-and-take workshop will provide you with tools to implement these strategies in your classroom.

#### **Pr** Engineer a Seed! The Engineering Process at Work in a K–2 Life Sciences Unit

(Grades P–5) 222, Conv. Center

**Jennifer Geragotelis** ([jgeragotelis@windham.k12.ct.us](mailto:jgeragotelis@windham.k12.ct.us)), Charles H. Barrows STEM Academy, North Windham, CT

**TJ McKenna** ([tmckenna@ctsciencecenter.org](mailto:tmckenna@ctsciencecenter.org)), Connecticut Science Center, Hartford

Presider: Heather Harkins, Charles H. Barrows STEM Academy, North Windham, CT

Join us as we explore the integration of NGSS and CCSS into a life sciences unit through a hands-on lesson to “Engineer a Seed!” Take home lesson plans.

**11:30 AM–12:30 PM Exhibitor Workshops****STEM...Loops and Thrills!***(Grades P–12)*

203, Conv. Center

Sponsor: Creative Learning Corp.—Bricks 4 Kidz®

**Jennifer Massett** ([jmassett@bricks4kidz.com](mailto:jmassett@bricks4kidz.com)), **Raymie Robin** ([rrobin@bricks4kidz.com](mailto:rrobin@bricks4kidz.com)), **Leslie Thibodeaux**, **Eric McFarland**, and **Brandee Orgeron**, Bricks 4 Kidz, Covington, LA

**Robin Bergeron** ([rbergeron@challenge-island.com](mailto:rbergeron@challenge-island.com)) and **Jakeithia Prejean** ([jprejean@challenge-island.com](mailto:jprejean@challenge-island.com)), Challenge Island®, Houma, LA

How about mixing amusement parks and STEM? Join us for a double feature of amusement park FUN! Build motorized LEGO® rides using your engineering skills and finish the workshop off by constructing roller coasters using potential and kinetic energy! Make learning FUN again with Bricks 4 Kidz and Challenge Island!

**A New IDEA for STEM Through the 5E Model***(Grades K–12)*

204, Conv. Center

Sponsor: Accelerate Learning

**Terry Talley**, STEMscopes, Rice University, Houston, TX Through the IDEA curriculum model, STEMscopes provides K–12 framework resources that embrace the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) model. IDEA also allows for teacher choice and success in meeting the varied academic and learning needs of the students in the science classroom. Claim, evidence, and reasoning; PBL; and investigation will be used relating to STEM classrooms and the NGSS.

**Real-World STEM Missions to the Edge of Space***(Grades 6–College)*

205, Conv. Center

Sponsor: StratoStar

**Jason Krueger**, Stratostar, Noblesville, IN

Join us for an overview of how you can implement High-Altitude Ballooning in your classroom and empower teachers to unlock student curiosity while teaching standards, problem solving, and collaborative teamwork skills. Experience a virtual balloon mission and student lesson using High-Altitude Balloon data and hear from educators that have successfully used StratoStar in the classroom. Gain knowledge, materials, and information to inspire confidence in using this unique Project Based Learning tool. Check out student/teacher testimonials. Visit [www.stratostar.net](http://www.stratostar.net) for more information and videos.

**Wind-energized Classroom***(Grades 4–College)*

207, Conv. Center

Sponsor: KidWind Project

**Michael Arquin** ([michael@kidwind.org](mailto:michael@kidwind.org)) and **Joe Rand** ([joe@kidwind.org](mailto:joe@kidwind.org)), KidWind Project, St. Paul, MN

Join KidWind as we explore classroom wind turbine activities. Play with simple devices you can build for less than \$5 as well as more advanced turbines that explore generators, gearboxes, and airfoils. Learn about WindWise curricula, student design challenges, and web tools to make your classroom come alive with wind-powered science.

**Genetics and Incorporating STEM with the CPO Science Crazy Traits Kit***(Grades 5–12)*

208, Conv. Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, NH

Students learn new vocabulary when they experience genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity will come alive as you create crazy creatures with a unique kit and study the resulting population. Take away STEM activities and an understanding of how to incorporate science and engineering practices into your lessons.

**Are Humans Still Evolving? Genetic Evidence of Human Evolution***(Grades 6–College)*

209, Conv. Center

Sponsor: Howard Hughes Medical Institute

**Bob Kuhn**, Centennial High School, Roswell, GA

A common misconception about evolution is that human populations are not under the influence of natural selection. Learn about three examples of human evolution by natural selection—lactose tolerance, sickle cell anemia, and starch digestion. Receive free classroom-ready resources from HHMI for middle school, high school, and undergraduate audiences.

**Bringing Technology into Your STEM Classroom***(General)*

211, Conv. Center

Sponsor: It's About Time

**Kevin Schroeder** ([kschroeder@iat.com](mailto:kschroeder@iat.com)), It's About Time, White Bear Lake, MN

Come take part in NGSS-focused activities for elementary (matter and interactions), middle school (ecosystem), and high school (friction). Collect and analyze data, report observations, and more with the award-winning *einstein™ Science Learning Platform/einstein Tablet+*. Already have devices? With *einstein LabMate™+*, you can wirelessly connect to your existing devices already in place.

### Chemical and Environmental Technology

(Grades 8–12)

212, Conv. Center

Sponsor: Fisher Science Education

**Robert Marshall** ([Robert.Marshall@thermofisher.com](mailto:Robert.Marshall@thermofisher.com)), Carnegie Science Center, Pittsburgh, PA

Following the NGSS model, design and interpret the results of your team's experiment in order to answer basic chemistry and environmental science questions. You will be using innovative lab equipment created to put the power in your students' hands. Then, share your data and ideas to keep the learning going.

### K'NEX® Computer Control/STEM Explorations

(Grades 4–10)

213, Conv. Center

Sponsor: K'NEX Education

**Maureen Kratz**, K'NEX Education, Hatfield, PA

Build, program, and control K'NEX models! At its simplest, computer control involves using a computer to control electrical devices such as lights, buzzers, and motors. Using the K'NEX computer control software and interface, participants will build models and write programs to control a K'NEX amusement park model using motors, reed switches, magnets, LEDs, and buzzers. Join us for an excellent introduction to programming and control systems using a low-threshold, high-ceiling flow chart programming language. Standards-focused STEM concepts will guide our exploration.

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### 11:45 AM–12:45 PM Presentations

#### **Pa** Taking the Voice of the STEM Educator to Washington

(Grades K–12)

217, Conv. Center

**Anthonette Pena**, Triangle Coalition for STEM Education, Arlington, VA

Too often, the voice of the classroom teacher is absent from national conversations on education policy. A team of STEM educators will share how they are influencing national initiatives, federal programs, and education policies this school year while serving as Albert Einstein Distinguished Educator Fellows in Washington, D.C. Fellows serve at federal agencies, including DOE, NASA, NOAA, and NSF, as well as in congressional offices.

#### **Pa** Vertical Teaming for STEM

(Grades K–12)

218, Conv. Center

**Debra Hall** ([debra.hall@dpi.nc.gov](mailto:debra.hall@dpi.nc.gov)) and **Beverly Vance** ([beverly.vance@dpi.nc.gov](mailto:beverly.vance@dpi.nc.gov)), North Carolina Dept. of Public Instruction, Raleigh

K–12 science teachers are implementing vertical teaming to increase rigor and college and career readiness for students. We will share methods to assist in developing successful vertical teams.

#### **Pa** LIGO/St.Tammany/Tangipahoa: A District and Research Facility Partnership

(Grade 9)

219, Conv. Center

**William Katzman** ([wkatzman@ligo-la.caltech.edu](mailto:wkatzman@ligo-la.caltech.edu)), LIGO Science Education Center, Livingston, LA

**Paulette Perrin**, St. Tammany Parish School Board, Covington, LA

Hear lessons learned from a four-year partnership among LIGO and the St. Tammany and Tangipahoa school districts centering around grade 9 physical science classes. Representative groups of students from each school were given field trips to LIGO.

#### **E** Designing STEM Adventures Using the Legacy Cycle

(Grades 3–8)

220, Conv. Center

**Margie Hawkins** ([margiebg@gmail.com](mailto:margiebg@gmail.com)), Winfree Bryant Middle School, Lebanon, TN

**Sally Pardue** ([spardue@tntech.edu](mailto:spardue@tntech.edu)), Tennessee Tech University, Cookeville

The Legacy Cycle uses challenges as anchors for learning. Join us and learn how to design exciting, standards-based, real-life STEM challenges for your students.

**HS Teaching STEM Subjects to Students with Special Needs***(Grades 4–College)*

223, Conv. Center

**Ed Linz** ([coachlinz@cox.net](mailto:coachlinz@cox.net)), Retired Educator, Springfield, VA

Explore proven strategies to improve performance of ALL students in STEM courses (all levels).

**HS Designing and Building a Student Colorimeter***(Grades 9–College)*

224, Conv. Center

**Fred Fotsch**, Springfield (MO) Public Schools

This session demonstrates building and using a colorimeter. Topics include 3-D printing, electronics circuits, light theory, chemistry of solutions, mathematical modeling, and student presentations.

**M Environmental Ed, PBLs, and STEM, Oh My!***(General)*

225, Conv. Center

**Valerie Blackburn** ([valljclm@gmail.com](mailto:valljclm@gmail.com)), The University of Texas Medical Branch at Galveston, Galveston, TX

One of the best and most often overlooked forums for STEM and Problem-Based Learning is environmental education. Let's examine good EE and its natural fit into what makes good STEM education. Leave with strategies and ideas that will help you take EE issues and turn them into PBLs.

**M Using STEM Competitions to Promote Team Building, Problem-Based Learning, and Critical Thinking***(Grades 6–8)*

226, Conv. Center

**Valerie Hawkins**, Southwest Academy Magnet School, Gwynn Oak, MD

This session is designed for grades 6–8 educators interested in exciting and challenging STEM competitions for their students. Join us and hear about three STEM after-school programs: FLL (FIRST LEGO® League), MESA, and Future City.

**M Fostering a Schoolwide STEM Culture Among Staff and Students***(Grades 5–12)*

227, Conv. Center

**Laura Champion** ([lcampion@m322.org](mailto:lcampion@m322.org)), **Whitney Reizner** ([wreizner@gmail.com](mailto:wreizner@gmail.com)), and **Emebet Bryan** ([Ebryan@m322.org](mailto:Ebryan@m322.org)), Renaissance Leadership Academy, New York, NY

Emphasis will be placed on strategies geared toward gaining staff buy-in and student interest for establishing a true cross-curricular environment that fosters inquiry-based, real-world learning beyond the traditional disciplinary boundaries.

**M Additive Manufacturing—From Bytes to Bits***(Grades 6–12)*

228, Conv. Center

**William Royal**, Clinch School, Sneedville, TN

Find out how to start a 3-D printing program from scratch. I'll share lessons learned and the successes achieved from starting a 3-D printing program for Career Technical Education and other subjects as well as connections to the CCSS.

**HS Applying Critical Media Literacy Skills in the Science Classroom and Beyond***(Grades 6–College)*

229, Conv. Center

**Lauren Rentfro** ([rentfria@lewisu.edu](mailto:rentfria@lewisu.edu)), **Kelly Reimer** ([kellypreimer@gmail.com](mailto:kellypreimer@gmail.com)), and **Allison Hinton** ([allisonnhinton@lewisu.edu](mailto:allisonnhinton@lewisu.edu)), Lewis University, Romeoville, IL

People encounter media reports involving scientific findings or claims daily. By training students to question media, including electronic, text, and multimedia sources, and to take a deeper look into them, science educators can lead their students to be more media savvy and better consumers of information in this digital media age.

**M Girls in Science Day***(Grades 6–10)*

230, Conv. Center

**Carmen Dixon** ([cd206994@ohio.edu](mailto:cd206994@ohio.edu)), Fredericktown High School, Fredericktown, OH

Women are still underrepresented in STEM careers, and research shows they begin to lose interest in middle school. In order to combat this, "Girls in Science Day" was created for school districts of all types to encourage girls' interests and attitudes in science, and ultimately, lead them to a STEM career.



**HS** **The STEM Puzzle: Helping Teachers Help Their Students Put It Together**

(Grades 7–12) 231, Conv. Center  
**Colleen Megowan-Romanowicz** ([amtaexec@realstem.com](mailto:amtaexec@realstem.com)), American Modeling Teachers Association, Tempe, AZ  
 Find out how modeling instruction helps physics, chemistry, and biology teachers design a learning environment in which students use science and engineering practices to build, test, and apply conceptual models.

**A** **STEM Program Start-Up Tools: Collaboration, Partnership, Science Instigator, and Strategic Administration**

(General) 232, Conv. Center  
**Jewel Reuter**, Episcopal High School, Baton Rouge, LA  
 Learn how to begin an innovation-rich STEM program by using collaborations with educators, corporations, and the school's Science Instigator to provide students with real-world inquiry experiences.

**HS** **Digital Paradigm Shift in Advanced Placement Science**

(Grades 10–College) R08, Conv. Center  
**Mark Ewoldsen** ([mewoldsen@gmail.com](mailto:mewoldsen@gmail.com)), La Canada High School, La Canada, CA  
 Digital techniques will be illustrated that enhance students' hands-on experience and allow them practice in using digital tools that many scientists actually use to collect data.

**11:45 AM–12:45 PM Hands-On Workshops**

**HS** **Chemistry and Computational Thinking: A Hands-On Approach**

(Grades 11–College) 210, Conv. Center  
**Willa Harper** ([wharper@olivet.edu](mailto:wharper@olivet.edu)), Olivet Nazarene University, Bourbonnais, IL  
 Experience modules designed to teach principles of chemistry through the use of modeling and visualization software. These modules focus on chemical reaction kinetics and molecular structure.

**Pa** **“Growing” Green Engineers: Using STEM to Design a Middle School Sustainability Unit**

(Grades 6–9) 215, Conv. Center  
**Dennis Pevey**, eStem Middle Public Charter School, Little Rock, AR  
 Our goal is to show middle school students what choices city planners must make in order to lessen the effects of urban heat islands. In this session, participants will test the impact vegetated roofs and green walls have on the internal temperature of buildings made from recycled products.

**Pr** **Using Literature to Spark Engineering Designs**

(Grades P–2) 216, Conv. Center  
**Renee Cunningham**, University of Mississippi, Tupelo  
 Explore the engineering design process through challenges inspired by picture book characters and events. Learn how to create your own challenges for your K–2 engineers!

**E** **Cajun Night Before Christmas STEM Unit**

(Grades K–5) 221, Conv. Center  
**Derenda Marshall** ([dmarshall19@gcsd.k12.sc.us](mailto:dmarshall19@gcsd.k12.sc.us)), Georgetown County School District, Georgetown, SC  
 This hands-on/minds-on engaging workshop is designed to show participants how to use children's literature, specifically the book *Cajun Night Before Christmas*, to integrate *Common Core State Standards ELA* with STEM.  
*Note:* This session is limited to 50 participants.

**E** **Scientific Argumentation Using Online Simulations**

(Grades 3–5) 222, Conv. Center  
**Jennifer Regelski**, University of South Carolina, Aiken  
 Using free online simulations as the basis for inquiry, learn how to effectively incorporate argumentation into your instruction.



**E** **How to Engage Every Student in STEM***(Grades 3–6)**R01, Conv. Center*

**Tricia McCloskey** ([triciamccloskey@yahoo.com](mailto:triciamccloskey@yahoo.com)), Sordt Elementary School, Monroe, MI

Reaching every student is a challenge for STEM teachers. Students from diverse socioeconomic groups often come from cultures where norms and values differ from those of the scientific community. Project-based science offers these students STEM experiences that prepare them for their future.

**M** **Engineering in Out-of-School Time***(Grades 6–8)**R02, Conv. Center*

**Tania Tauer**, Museum of Science, Boston, MA

Learn how to engage your students in the engineering design process in OST settings through a hands-on design challenge from the Engineering Everywhere curriculum.

**M** **Angles and Airplanes***(Grades 6–9)**R03, Conv. Center*

**Paul Ridgway** ([pridgway@eb.com](mailto:pridgway@eb.com)), Encyclopaedia Britannica, Inc., Chicago, IL

Take learning to new heights! Magnify the “M” in STEM by working as an air traffic controller and flying paper planes to explore angles. Handouts!

**M** **Here an Earth, There an Earth, Everywhere an Earth: Alien Planets—Real or Myth***(Grades 5–8)**R04, Conv. Center*

**Steve Culivan** ([stephen.p.culivan@nasa.gov](mailto:stephen.p.culivan@nasa.gov)), NASA Stennis Space Center, Stennis Space Center, MS

Soar into distant galaxies with these classroom activities. Explore how NASA is searching for Earth-like planets in other solar systems. Integrate NASA data, Kepler’s Third Law, and graphing skills to investigate “alien” planets.

**HS** **NASA’s Space Forensics: Integrating Storytelling into STEM Education***(Grades 8–12)**R07, Conv. Center*

**Sarah Eyer mann** ([sarah.e.eyermann@nasa.gov](mailto:sarah.e.eyermann@nasa.gov)) and **Sara Mitchell** ([Sara.Mitchell@nasa.gov](mailto:Sara.Mitchell@nasa.gov)), Syneren Technologies and NASA Goddard Space Flight Center, Greenbelt, MD

Explosions, collisions, and deaths—the universe contains numerous cosmic “crime scenes.” Introduce students to scientific problem solving through narratives and hands-on activities.

**12:30–3:30 PM Exhibits***The Great Hall A, Conv. Center*

Take advantage of this dedicated time to stroll through the exposition picking up tips, product samples, and ideas to spark your imagination.

**1:00–2:00 PM Exhibitor Workshops****Investigating STEM Strategies and Literacy Development Through Graphic Science***(Grades 5–9)**203, Conv. Center*

Sponsor: Capstone Classroom

**Kaz Kuzminski** ([kazkuz@aol.com](mailto:kazkuz@aol.com)), Capstone Classroom, Chicago, IL

Join us for an engaging, hands-on session as we integrate STEM strategies, differentiated science instruction, and literacy development through the use of Graphic Science.

### Ignite Student Interest in Anatomy with Hands-On Teaching Techniques

(Grades 7–College)

204, Conv. Center

Sponsor: ANATOMY IN CLAY® Learning System

**Chuck Roney**, Anatomy In Clay Learning System, Loveland, CO

The ANATOMY IN CLAY Learning System is an innovative and successful method for teaching and learning anatomy. Join us for a hands-on workshop where you can experience the power of building body systems with clay. Using the specially designed MANIKEN® model, witness how this system promotes student collaboration, problem-solving skills, and motivation.

### National Geographic Explorers—From the World to Your Classroom!

(Grades 1–6)

205, Conv. Center

Sponsor: National Geographic Learning

**Lionel Hinojosa**, National Geographic School Publishing, Monterey, CA

National Geographic provides students with exciting examples of an integration of disciplines that is “STEM.” Focusing on innovation and the applied process of addressing questions and designing solutions, Emerging Explorers provide ideal role models to teach awareness of STEM fields and occupations so you can integrate STEM teaching into your classroom.

### MacGyver Windmills

(Grades 4–12)

207, Conv. Center

Sponsor: KidWind Project

**Michael Arquin** ([michael@kidwind.org](mailto:michael@kidwind.org)) and **Joe Rand** ([joe@kidwind.org](mailto:joe@kidwind.org)), KidWind Project, St. Paul, MN

Build a windmill using materials commonly found in the classroom. Determine blade efficiency by using the wind to lift weights. Windmills are the ancient ancestors of modern wind turbines. To understand how wind turbines work, one must first understand a basic windmill.

### Investigating STEM and the NGSS with CPO Science Link™

(Grades 9–12)

208, Conv. Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, NH

CPO Science is proud to unveil its new Link Series of hands-on modules that focus on STEM and NGSS activities with online interactive content. The Energy Car Link module will use our Energy Car and Track along with our Data Collector and photogates to explore motion, force, and energy conservation.

### When Good Cells Go Bad: What Cancer Can Teach Students About Cell Biology and Genetics

(Grades 9–College)

209, Conv. Center

Sponsor: Howard Hughes Medical Institute

**Megan Stine**, Howard Hughes Medical Institute, Chevy Chase, MD

Cancer research has illuminated some ways cancer cells “go bad.” Learn how to use cancer as a hook to teach core cell biology and genetics concepts, including genetic mutations, gene regulation, the cell cycle, and cell signaling pathways. Receive HHMI’s free classroom-ready resources adapted for high school and college courses.

### Renewable Energy

(Grades 5–10)

213, Conv. Center

Sponsor: K’NEX Education

**Maureen Kratz**, K’NEX Education, Hatfield, PA

Explore Going Green renewable energy with your students! It’s designed to address critical STEM concepts and provide instructional models that can enhance students’ understanding of these concepts. Build a model and demonstrate how it can be operated with electricity generated from wind, water, and solar power. Explore other models that complete real-world tasks with these same three renewable power sources.

**2:30–3:30 PM Exhibitor Workshops****Solving the Mystery of STEM Using Forensic Science and Digital Microscopy***(Grades 6–12)*

208, Conv. Center

Sponsor: Frey Scientific/School Specialty Science

**Lou Loftin**, Nevada's Northwest Regional Professional Development Program, Reno

Conduct a number of STEM-focused forensic activities that link scientific investigations with analysis and investigative skills to solve multifaceted “cases” involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets. See how the program software allows the integration of virtual labs, investigative activities, the preparation of web-based content, and individualized assessment.

**Forces, Energy, and Motion***(Grades 4–10)*

213, Conv. Center

Sponsor: K'NEX Education

**Maureen Kratz**, K'NEX Education, Hatfield, PA

It's off to the races! Join us as we investigate potential and kinetic energy and force and motion with K'NEX® cars. Gravity, rubber bands, springs, wind, battery motors, and flywheels will power models as we explore complex STEM concepts. How will your car perform? How would you redesign your model to make it a first-place car? Emphasis will be on strategies that empower students to design and complete their own experiments from the teacher's guide as well as standards-focused STEM concepts.

**3:00–4:00 PM Presentations****M Building the 21st-Century Science Classroom: iPads, Tablets, Apps, and More***(Grades 6–12)*

206, Conv. Center

**Bryan Turner** ([bryan\\_turner@scps.k12.fl.us](mailto:bryan_turner@scps.k12.fl.us)), Milwee Middle School, Longwood, FL**Matthew Purvis** ([matthewpurvis@knights.ucf.edu](mailto:matthewpurvis@knights.ucf.edu)), University of Central Florida, Orlando

Explore scientific phenomena using a variety of digital tools and apps, and create digital formative and summative assessments in your classroom. [21stcenturysci.weebly.com](http://21stcenturysci.weebly.com)

**Pr Strategies for Successful Place-based Learning***(Grades P–4)*

216, Conv. Center

**Ingrid Olson** and **Molly Griffo** ([molly.griffo@lincoln.k12.or.us](mailto:molly.griffo@lincoln.k12.or.us)), Lincoln County School District, Waldport, OR

Find out how to incorporate placed- and field-based inquiry learning experiences at the K–4 level while meeting standards, motivating students, and managing logistics.

**Pa Plugging in the USB: A Partnership Model for STEM Systemic Change Among University, School, and Business***(General)*

217, Conv. Center

**Joelle Clark**, **Jane Kirkley** ([jane.kirkley@nau.edu](mailto:jane.kirkley@nau.edu)), and **Pradeep Dass** ([pradeep.dass@nau.edu](mailto:pradeep.dass@nau.edu)), Northern Arizona University, Flagstaff

Are you plugged into STEM? Come increase your potential for STEM learning by participating in this interactive session discussing a partnership model with Arizona schools.

**Pa Analysis of Junior Engineering Achievements Performance for 10 Years***(Grades 2–7)*

218, Conv. Center

**Sooah Lee** ([jhunys@snue.ac.kr](mailto:jhunys@snue.ac.kr)), Sinsanggye Elementary School, Seoul, Republic of Korea**Youngseok Jhun** ([jhunys@snue.ac.kr](mailto:jhunys@snue.ac.kr)), Seoul National University of Education, Seoul, Republic of Korea**Kwon Gyeong Pil** ([jhunys@snue.ac.kr](mailto:jhunys@snue.ac.kr)), Gyeongin National University of Education, Incheon, Republic of Korea**Jung hoon Choi**, ([jhunys@snue.ac.kr](mailto:jhunys@snue.ac.kr)), Hanyang University, Seoul, Republic of Korea

Junior Engineering Achievement (JEA) is a program that enables engineers to visit local elementary schools to introduce state-of-the-art technology and let students experience engineering work in an easy and interesting way. Hear how the National Academy of Engineering of Korea (NAEK) developed a network of companies willing to participate in JEA.

**Pa Seeing Earth Data***(Grades 7–College)*

219, Conv. Center

**Laura Allen**, American Museum of Natural History, New York, NY**Dan Pisut** ([dan.pisut@noaa.gov](mailto:dan.pisut@noaa.gov)), NOAA Environmental Visualization Laboratory, Silver Spring, MD

Let's discuss the role of data visualization as an effective tool to explore Earth systems change. How do we visualize data beyond just making pictures, but inviting insights? This session will use a partnership conducted by the American Museum of Natural History and NOAA as a springboard to explore this theme.

**HS** **Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun**

(Grades 7–12) 223, Conv. Center

**Debbie Goodwin** (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, MO

**Andrew Nydam** (*andrewnydam@hotmail.com*), ASM International Foundation, Materials Park, OH

Use corrosion to teach practical applications of chemistry concepts. Make reactivity, oxidation/reduction, and corrosion engineering exciting and relevant. Take home a CD of labs and demos.

**HS** **Minds-On Learning in a STEM Classroom**

(Grades 9–12)

229, Conv. Center

**Edmund Mitzel** and **Justin Sewell** (*jsewell@bcps.org*), Pikesville High School, Baltimore, MD

Transform existing curricula into minds-on lessons supporting the NGSS and CCSS by integrating STEM principles into a student-centered learning atmosphere.

**M** **Connecting NGSS Science and Inquiry with the Common Core State Standards, ELA**

(Grades 4–8) 225, Conv. Center

**Kevin Niemi**, University of Wisconsin, Madison

**Debra Kneser** (*dmkneser65@marianuniversity.edu*), Marian University, Fond du Lac, WI

Explore how science inquiry and disciplinary literacy skills are incorporated into the *Next Generation Science Standards*. In addition, using literacy strategies that pertain to science and engineering, delve into applications of the *Common Core State Standards, ELA*. Attention will be paid to techniques and approaches such as classroom notebooking, read alouds, and reading graphical representations.

**E** **The Global Cardboard Challenge: Our Town**

(Grades K–6)

R01, Conv. Center

**Ruth Leonard** (*ruth.leonard@sullivank12.net*), Sullivan County Schools, Blountville, TN

This is an international creative event where children build whatever their imagination allows out of recycled materials. Come see how we planned/implemented our event. The creativity and engineering ideas were astonishing, from arcade games to costumes to a carousel.

**M** **STEM Garden Challenge: How Does Your Garden Grow?**

(Grades 6–8) 226, Conv. Center

**Chad Pavlekovich** and **Jayne Malach** (*jmalach@wcboe.org*), Salisbury Middle School, Salisbury, MD

Plant new learning in your STEM classroom! See how students in grades 6–8 competed against one another by planting a garden and cashing in the crops to determine their team's success. Teamwork, strategy, research, and hard work are a must in order to be successful.

**M** **How to Get Students Thinking About STEM Careers Now!**

(Grades 4–12) 227, Conv. Center

**Lisa Kist**, Gridley Middle School, Tucson, AZ

Individualized STEM instruction can be accomplished using free virtual reality software and a school's existing computer labs. Hear how to allow students to experience STEM careers now!



**3:00–4:00 PM Hands-On Workshops****Pa** **Using Collaboration to Increase STEM Engagement for Underrepresented Youth***(General)* 215, Conv. Center**Lou Papai**, Sci-Port Discovery Center, Shreveport, LA

This workshop will be presented by the Louisiana STEM Girls Collaborative Project, an affiliate of The National Girls Collaborative Project (NGCP). Complex issues require a multi-pronged approach. Come learn about proven models, strategies, and resources to engage and support underrepresented youth in after-school STEM programs.

**E** **Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction***(Grades 3–5)* 221, Conv. Center**Stan Hill** ([shill@wakehealth.edu](mailto:shill@wakehealth.edu)) and **Terri Yates**, Wake Forest School of Medicine, Winston Salem, NC**JaNae Joyner**, Wake Forest Problem Based Learning, Winston Salem, NC

This workshop actively engages participants in Problem-Based Learning activities that connect to *CCSS Mathematics* and *NGSS*.

**Pr** **Every Child Is an Engineer!***(Grades K–5)* 222, Conv. Center**Michele Wiehagen** ([michele.wiehagen@sdhc.k12.fl.us](mailto:michele.wiehagen@sdhc.k12.fl.us)) and **Shana Tirado** ([shana.tirado@sdhc.k12.fl.us](mailto:shana.tirado@sdhc.k12.fl.us)), Hillsborough County Public Schools, Tampa, FL

Every elementary child (K–5) becomes an engineer when you integrate elementary lessons into the regular school day curriculum. Join us and become an ENGINEER!

**M** **EXTREME WEATHER***(Grades 5–12)* 228, Conv. Center**Troy Cline** ([troy.d.cline@nasa.gov](mailto:troy.d.cline@nasa.gov)) and **Dorian Janney** ([dorian.w.janney@nasa.gov](mailto:dorian.w.janney@nasa.gov)), NASA Goddard Space Flight Center, Greenbelt, MD

This joint mission teacher training experience will include brief presentations from NASA MMS and GPM scientists, Extreme Weather hands-on activities, and an iBook demonstration! Lots of free NASA materials!

**A** **What Do the Standards of Mathematical Practice Look Like in the STEM Classroom?***(Grades 9–12)* 232, Conv. Center**Kimberly Burton-Regulski** ([kburton@bcps.org](mailto:kburton@bcps.org)) and **Angela Waldrop** ([awaldrop2@bcps.org](mailto:awaldrop2@bcps.org)), Eastern Technical High School, Essex, MD

In this workshop, participants will examine the STEM classroom through the lens of the *CCSS Mathematics*. Discover how they connect to all areas of STEM and are at the heart of the problem-solving process.

**M** **Equity in STEM: The Case for the Integration of Character Education in a STEM Learning Environment***(Grades 6–12)* R03, Conv. Center**Chéla Wallace**, Infuse Positivity, San Antonio, TX

Let's spark female interest in STEM. Join us as we dissect the main points from AAUW's "Why so few?" report. Participants will have the opportunity to examine their current practices as STEM educators and, by the end of the session, produce a sample lesson/program geared toward national standards that fuses character traits and STEM techniques.

**HS** **Understanding the Role of Enzymes in the Production of Biofuels: A Project Based Learning Approach***(Grades 9–12)* R06, Conv. Center**Jacob Anastasoff** ([janastasoff@idaschools.org](mailto:janastasoff@idaschools.org)), Ida High School, Ida, MI**Scott LaRoy** ([slaroy@emich.edu](mailto:slaroy@emich.edu)), Eastern Michigan University, Ypsilanti**Renee Coch** ([rcoch@airport.k12.mi.us](mailto:rcoch@airport.k12.mi.us)), Airport High School, Carleton, MI

What is an enzyme's role in energy production? In the production of biofuels, enzymes can break down cellulose, but why is it a more difficult substance to convert to biofuels? This hands-on activity will provide insight into the specific role of enzymes and their individualistic nature.

**HS** **Catch Students' Attention with Mousetrap Vehicles!***(Grades 9–College)* R07, Conv. Center**Alden Balmer**, McNeil High School, Austin, TX**Karen Ostlund** ([klostlund@utexas.edu](mailto:klostlund@utexas.edu)), NSTA Retiring President, Austin, TX

Build a mousetrap car and find out how to integrate science, technology, engineering, and mathematics by modifying the design to increase the vehicle's speed and distance. Kits and handouts provided.

**4:15–5:15 PM Presentations**

**Pr Strategies for Effectively Infusing STEM into the Early Childhood Classroom**

*(Preschool)* 216, Conv. Center  
**Roxanne Molina**, Nova Southeastern University, North Miami Beach, FL

Attention will be paid to strategies for infusing and creating STEM activities in an early childhood classroom. Participants will engage in integrating STEM into a preschool unit.

**Pa Partnering for Connected STEM Professional Development**

*(Grades 5–9/College)* 217, Conv. Center  
**Dewayne Morgan**, University System of Maryland, Adelphi

Take away a set of specific strategies that can be used to create P–20 partnerships and learn how to set specific measurable goals. Hear how these strategies have resulted in greater STEM achievement from students.

**Pa Next Generation STEM: Forging Professional Development Partnerships Among Universities, County Offices of Education, and Informal Science Institutions**

*(General)* 218, Conv. Center  
**Cristina Trecha** (*ctrecha@ucsd.edu*), University of California, San Diego

Actively map out your local STEM resources to discover new ways to build regional teacher leadership for uniting the *Next Generation Science Standards*; *Common Core State Standards*, in English language arts and mathematics; educational technology; and engineering.

**Pa Connect-Collaborate-Relate-Create: Design Innovative Professional Learning Using the Rockwall STEM Experience Model**

*(Grades 6–12)* 219, Conv. Center

**Joey Belgard** (*joey.belgard@rockwallisd.org*), **Jean Laswell** (*jean.laswell@rockwallisd.org*), and **Cathi Albrecht** (*cathryn.albrecht@rockwallisd.org*), Rockwall (TX) ISD

Inspired by the Perot Museum of Nature and Science—secondary math, science, and CTE teachers developed cross-curricular lessons. Find out how to implement the model with your teachers!

**M Snakes of the Southeast Go STEM**

*(Grades 5–8)* 220, Conv. Center

**Nina Runion**, Georgetown (SC) County School District

This program was created by a grade 8 student who has a passion about snakes and wanted to foster better understanding of the different species in the Southeast. He created a STEM project based on his interest and creativity. He will share his rubric of a snake model and habitat fit, showing their importance to the ecosystem. This project addresses grades 6–8 standards that are integrated into an authentic experience. No live animals, but plenty of photos.

**M Using Minimal Resources to Achieve Maximum Results**

*(Grades 6–8)* 225, Conv. Center

**Gloria Williams-Nandan** (*gwilliamsnandan@schools.nyc.gov*), **Maria Rowena Baidan** (*baidanmaria@gmail.com*), and **Tashica Mitchell**, J.H.S. 292 Margaret S. Douglas, Brooklyn, NY

Find out how to use minimal resources to achieve maximum results while incorporating a culture of STEM for grades 6–8 classrooms.

**M STEM Inquiry and Problem-Based Learning**

*(Grades 4–7)* 226, Conv. Center

**Allison Knapp**, Colorado STEM Academy, Westminster

Hear about authentic inquiry learning using a model involving severe weather and related disasters. This Problem-Based Learning experience was especially enriching for English language learners.



**HS** Using Global Climate Change as a Platform for Interpreting Graphical Data

(Grades 9–12)

229, Conv. Center

**Karena Ruggiero** (*kruggier@utk.edu*), University of Tennessee, Knoxville

Examine the use of Global Climate Change as a platform to explain manipulations of graphs helping students recognize the ways in which perspective and scale play a role in graphing data.

**M** Implications of STEM Education on Minority Populations and Methods for Improvement

(Grades 4–8)

230, Conv. Center

**Brenda Paul**, Henderson Middle School, Chamblee, GA

Discussion centers on the reasons for low minority participation in STEM fields and methods teachers can use to improve participation by underrepresented minority groups in STEM-related fields.

**A** Designing a New STEM Program: A First-Year Guide

(Grades K–5)

232, Conv. Center

**Laura Mackay**, Ed White Elementary School, El Lago, TX

Implementing a STEM program takes many resources. Learn how to structure an Explore Committee, develop curriculum, and recruit external resources to build an effective program.

**HS** Shoestring Aquaponics: One Method for Forming an Integrated Applied Science Program

(Grades 7–12)

R08, Conv. Center

**Michael Towne** (*michael.r.towne@gmail.com*) and **Doug Henderson** (*sarahdoug@earthlink.net*), Citrus Hill High School, Perris, CA

Learn to build a functioning aquaponics system for under \$100. Use this system as a basis for developing an integrated applied science program. We will also highlight ways to overcome institutional barriers for ethnic and gender minority students in the fields of science, engineering, and technical training.

## 4:15–5:15 PM Hands-On Workshops

**HS** Introducing Nanoscience to Science Classrooms

(Grades 6–12)

222, Conv. Center

**Lisa del Muro** (*lisa.delmuro@d214.org*) and **Carol Bouvier** (*carol.bouvier@d214.org*), Wheeling High School, Wheeling, IL

There are 10 “things” every student should know about nanotechnology. In this workshop, you will be provided with innovative ways to integrate “these things” into your school curriculum.

**M** Prototyping Your Way to Success in the STEM Classroom

(Grades 2–12)

228, Conv. Center

**Gina Tesoriero** (*ginatesoriero@gmail.com*) and **Amanda Solarsh** (*amandasolarsh@gmail.com*), Simon Baruch MS104, New York, NY

Learn innovative ways to determine success in the STEM classroom. Engage in challenges that explore various methods of prototyping and testing.

**M** The AIAA Educator Academy: Mars Rover Celebration Curriculum

(Grades 3–8)

R02, Conv. Center

**Edgar Bering** (*eabering@uh.edu*), University of Houston, TX

This workshop presents a 30 period (Engage, Explore, Explain, Elaborate, and Evaluate) inquiry-based science curriculum that uses the excitement of Mars exploration to motivate students to excel.

**M** Engineering Buoys to Test Water Conditions in a Local Water Source

(Grades 6–8)

R03, Conv. Center

**Paige Jarrell**, Norwood Middle School, Norwood, OH

Find out how students studied drifter buoy data and then engineered buoys to monitor conditions in a local stream. Make and test your own buoy!

**M** STEM Journals: The Engineered Answer You’ve Been Looking for!

(Grades 5–8)

R04, Conv. Center

**Jasmine Tremblay**, Georgia Elementary & Middle School, Saint Albans, VT

Learn about the multifaceted benefits of teaching with STEM journals by creating one! This innovative teaching/management tool incorporates best practices into one cohesive program.

**M** **Baby Steps: Introducing Engineering Design into the Science Classroom**

(Grades 6–8)

R05, Conv. Center

**Jennifer Regelski**, University of South Carolina, Aiken  
Learn to take the labs already being used in the classroom and transform them into engineering design labs that will increase student achievement and motivation.

**HS** **Building a \$10 Smartphone Microscope**

(Grades 6–12)

R06, Conv. Center

**Jacob Anastasoff**, Ida High School, Ida, MI  
**Scott LaRoy** ([slaroy@emich.edu](mailto:slaroy@emich.edu)), Eastern Michigan University, Ypsilanti  
**Renee Coch** ([rcoch@airport.k12.mi.us](mailto:rcoch@airport.k12.mi.us)), Airport High School, Carleton, MI  
Build your own \$10 smartphone microscope with focus on a project-based approach toward engineering in the classroom. Bring your own personal device.

**HS** **Smile! You're Using Classroom Cameras!**

(Grades 6–12)

R07, Conv. Center

**Taylor Clements**, Atherton High School, Louisville, KY  
Are you interested in Project Based Learning that is hands on and student centered? Bring your camera-ready device and put your students in the spotlight.

**5:30–7:00 PM STEM Iron Chef Competition Judging**

R09, Conv. Center

*The STEM Iron Chef Competition Begins!*

Each team presents their creative “recipes” and guest judges choose winners; great prizes will be awarded!





**8:00–10:00 AM Closing Session**

(General)

R09, Conv. Center

**8:00–9:00 AM**

**Part I: Strand Leader Reports**

**Eric Wilson** ([emwilson00@yahoo.com](mailto:emwilson00@yahoo.com)), Chair, 2014 STEM Forum & Expo Steering Committee, and Red Lion (PA) Area School District

**Amy Bodin** ([amy.bodin@duluth.k12.mn.us](mailto:amy.bodin@duluth.k12.mn.us)), Primary Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Duluth (MN) Public Schools

**Mijana Lockard** ([mijana.lockard@polk-fl.net](mailto:mijana.lockard@polk-fl.net)), Upper Elementary Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Lincoln Academy, Lakeland, FL

**Adrienne Gifford**, Middle Level Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Open Window School, Bellevue, WA

**Kavita Gupta** ([kavita\\_gupta@fuhsd.org](mailto:kavita_gupta@fuhsd.org)), High School Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Monta Vista High School, Cupertino, CA

**Reo Pruiett** ([rpruiett@cftexas.org](mailto:rpruiett@cftexas.org)), Partnerships Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Educate Texas, Dallas

**Thomas Evans** ([tevans@bcps.org](mailto:tevans@bcps.org)), Administrators Strand Leader, 2014 STEM Forum & Expo Steering Committee, and Eastern Technical High School, Essex, MD

Eric Wilson, chair of the STEM Steering Committee, will lead strand leaders through brief reports and summaries of the two-day experience. This is an opportunity to hear some of the highlights you may have missed.

**9:00–10:00 AM**

**Part II: Today's STEM Students (A Student Panel Discussion)**

Introductions: **Jean May-Brett**, Honorary Steering Committee Member, 2014 STEM Forum & Expo Steering Committee, and Louisiana Dept. of Education, Baton Rouge  
Moderator: **Nathan Cotten**, President, Louisiana Science Teachers Association and Terrebonne Parish (LA) School District

**Tram Nguyen**, Student, Thomas Jefferson High School, Gretna, LA

**Hoang Nguyen**, Student, Chalmette High School, Chalmette, LA

**Alex Lew**, Student, Northshore High School, Slidell, LA

**Donald Lamotte**, Student, Lusher High School, New Orleans, LA

**Kayla Tarr**, Student, Patrick F. Taylor Science and Technology Academy, Westwego, LA

A panel of outstanding high school students will describe their interests, visions, and hopes of entering STEM-related careers. The students will discuss the educational opportunities they have had and programs they have experienced. They will examine the encouragement they have received to this point and consider the support they will need to move successfully into their future studies and occupations.

Some exhibitors have classified their products by grade level.

Elementary	E
Middle School	M
High School	HS
College	C

Scan the QR code for a map display of the Exhibit Hall on our conference app.



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 Milwaukee, WI 53202  
 Phone: 414-774-6562  
 E-mail: [officemanager3dmd@wi.rr.com](mailto:officemanager3dmd@wi.rr.com)  
 Website: [www.3dmoleculardesigns.com](http://www.3dmoleculardesigns.com)

Our innovative, hands-on kits and models focus on core ideas and crosscutting concepts in biology, chemistry, physical, and life sciences. We involve teachers in developing kits, writing materials, and field testing. Kits support STEM and the NGSS. Ask about our new *Enzymes In Action Kit* and ATP Model.

**A+ Mobile Solutions** #309  
 1490 N. Clinton Ave. E, M, HS  
 Bay Shore, NY 11706  
 Phone: 631-675-2273  
 E-mail: [rwaibel@theaplusgroup.com](mailto:rwaibel@theaplusgroup.com)  
 Website: [www.aplus-edu.com](http://www.aplus-edu.com)

A+ Mobile Solutions is passionate about preparing the students of today for the high-tech careers of tomorrow. Our Mobile STEM solution provides educators with a teaching platform that improves efficiency and allows students to learn in a hands-on environment.

**Accelerate Learning** #412  
 5615 Kirby Dr., Suite 310 E, M, HS  
 Houston, TX 77005  
 Phone: 713-348-5433  
 E-mail: [stemscopes@rice.edu](mailto:stemscopes@rice.edu)  
 Website: [www.acceleratelearning.com](http://www.acceleratelearning.com)

Accelerate Learning, in conjunction with Rice University, has created STEMscopes™, a comprehensive digital core content that can be adapted to unique teaching and learning styles. Affordable for schools, engaging for students, and easy to use for teachers, STEMscopes™ drives student achievement with inquiry-based learning, assessments, PBLs, cross-curricular connections, intervention tools, acceleration materials, and teacher support resources.

**ACT** #211  
 500 ACT Dr. E, M, HS, C  
 Iowa City, IA 52243  
 Phone: 319-337-1793  
 E-mail: [steven.triplette@act.org](mailto:steven.triplette@act.org)  
 Website: [www.act.org](http://www.act.org)

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**Ampliyus** #329  
 1770 Massachusetts Ave. M, HS, C  
 Cambridge, MA 02140  
 Phone: 781-990-8PCR  
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 Phone: 888-371-6161  
 E-mail: [info@birdbraintechnologies.com](mailto:info@birdbraintechnologies.com)  
 Website: [www.birdbraintechnologies.com](http://www.birdbraintechnologies.com)

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 Website: [www.bie.org](http://www.bie.org)

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 New Orleans, LA 70123  
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 E-mail: [caryl.fagot@boem.gov](mailto:caryl.fagot@boem.gov)  
 Website: [www.boem.gov](http://www.boem.gov)

The Bureau of Ocean Energy Management (BOEM), an agency within the U.S. Department of the Interior, manages the responsible exploration and development of offshore energy and marine mineral resources on the U.S. Outer Continental Shelf. BOEM promotes energy independence, environmental protection, and economic development through responsible management of these resources based on the best available science.

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 North Canton, OH 44720  
 Phone: 800-968-4332  
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 Website: [www.carolina.com](http://www.carolina.com)

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 Website: [cbm.msoe.edu](http://cbm.msoe.edu)

As an instructional materials development laboratory, we create student-centered, hands-on kits and models for the molecular biosciences. Through our professional development experiences, teachers learn active teaching skills and are involved in developing and field testing new kits. Ask about our outreach programs—SMART Teams and Science Olympiad Protein Modeling Event.

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- Click2Science** #511  
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PO Box 830725  
Lincoln, NE 68583-0725  
Phone: 402-472-7377  
E-mail: [click2sciencepd@unl.edu](mailto:click2sciencepd@unl.edu)  
Website: [www.click2sciencepd.org](http://www.click2sciencepd.org)
- Click2Science is an interactive, professional development site for trainers, coaches, site directors, and frontline staff/volunteers working in an out-of-school time program serving children and youth. Click2Science is developed by the University of Nebraska—Lincoln Extension in partnership with the Noyce Foundation. For more information, visit [www.click2sciencepd.org](http://www.click2sciencepd.org).
- CPO Science/School Specialty Science** #301  
M, HS, C  
80 Northwest Blvd.  
Nashua, NH 03063  
Phone: 800-442-5444  
E-mail: [customerservice.cpo@schoolsspecialty.com](mailto:customerservice.cpo@schoolsspecialty.com)  
Website: [www.cposcience.com](http://www.cposcience.com)
- CPO Science provides all the essential components for a hands-on, inquiry-based science program for grades 6–12. Students are truly engaged through hands-on learning, STEM projects, and real-world activities. CPO Science programs are ideal for differentiated instruction helping students of all abilities succeed in science class and the world beyond.
- Creative Learning Corp. Bricks 4 Kidz® and Challenge Island®** #526  
19 S. Division Dr. E, M, HS  
Covington, LA 70433  
Website: [www.bricks4kidz.com](http://www.bricks4kidz.com)
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Arlington, VA 22209  
Phone: 877-885-5716  
E-mail: [info@uscypatriot.org](mailto:info@uscypatriot.org)  
Website: [www.uscypatriot.org](http://www.uscypatriot.org)
- CyberPatriot is a national youth cyber education program created to inspire students toward careers in cybersecurity or other STEM disciplines. At the core of the CyberPatriot program is the National Youth Cyber Defense Competition, which challenges students to resolve real-life cybersecurity situations in a virtual environment.
- Delta Education/School Specialty Science** #301  
E, M, HS, C  
80 Northwest Blvd.  
Nashua, NH 03063  
Phone: 800-258-1302  
E-mail: [customerservice.delta@schoolsspecialty.com](mailto:customerservice.delta@schoolsspecialty.com)  
Website: [www.deltaeducation.com](http://www.deltaeducation.com)
- Delta Education is your leading educational partner in providing hands-on, inquiry-based K–8 curriculum and instructional resources. With programs like FOSS® and DSM®, informational texts (*Delta Science Content Readers*), and STEM resources, we help you develop students who set a world-class standard for college and workforce readiness.
- eCYBERMISSION** #119  
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Arlington, VA 22201  
Phone: 866-GO-CYBER  
E-mail: [missioncontrol@ecybermission.com](mailto:missioncontrol@ecybermission.com)  
Website: [www.ecybermission.com](http://www.ecybermission.com)
- eCYBERMISSION is an online STEM competition for grades 6–9 teams. Your team will propose a solution to a real problem in your community and compete for state, regional, and national awards.
- Educational Travel Services, Inc.** #222  
PO Box 82605 M, HS  
Portland, OR 97282  
Phone: 503-653-3988  
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 Phone: 617-589-0230  
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 Website: [www.eie.org](http://www.eie.org)

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 West Bridgewater, MA 02379  
 Phone: 774-776-7371  
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 Vernon Hills, IL 60061  
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 Website: [www.hand2mind.com](http://www.hand2mind.com)

ETA hand2mind offers a fully integrated STEM program that harnesses the power of hands-on learning to inspire curiosity and nurture critical thinking and problem-solving skills. Developed in partnership with Purdue University, the modular lessons are teacher-friendly and the activities are fun and engaging for preK–5 students.

**Filament Games #428**  
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 Madison, WI 53704  
 Phone: 608-251-0477  
 E-mail: [contact@filamentgames.com](mailto:contact@filamentgames.com)  
 Website: [www.filamentgames.com](http://www.filamentgames.com)

Filament Games is a game production studio that exclusively creates learning games. Our core competency is producing games that combine best practices in commercial game development with key concepts from the learning sciences. Accordingly, our staff is composed of individuals who are equal parts game and instructional designers; a “dual literacy” that allows us to engineer authentic game-play mechanics (rules and interactions that directly correlate with specific learning objectives).

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 Pittsburgh, PA 15275  
 Phone: 724-517-2011  
 E-mail: [jaclyn.porter@thermofisher.com](mailto:jaclyn.porter@thermofisher.com)  
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 Website: [www.flinnsci.com](http://www.flinnsci.com)

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 Website: [www.freyscientific.schoolsspecialty.com](http://www.freyscientific.schoolsspecialty.com)

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College Station, TX 77845  
Phone: 979-703-1925  
E-mail: [daniel.westerheim@fuelcellsetc.com](mailto:daniel.westerheim@fuelcellsetc.com)

The Fuel Cell Store is the largest online marketplace for fuel cell and alternative energy-related items. Classroom-ready kits and experiments for elementary to college age students are available. From raw materials to Fuel Cell Stacks and Hydrogen production, the Fuel Cell Store can meet all of your energy education needs.

**General Atomics/  
American Physical Society** #110  
3550 General Atomics Court M, HS  
San Diego, CA 92121  
Phone: 951-970-3542  
E-mail: [rick.lee@gat.com](mailto:rick.lee@gat.com)  
Website: [www.apsdpp.org](http://www.apsdpp.org)

October 2014 will mark a return of the American Physical Society's Division of Plasma Physics Conference to New Orleans. Local educators are invited to attend classroom-relevant workshops and students are invited to attend a highly interactive and exciting Plasma Sciences Expo. We'll preview these two free events with demonstration on E&M, magnetism, and plasma.

**Grand Classroom** #408  
1455 E. Rio Rd. E, M, HS  
Charlottesville, VA 22901  
Phone: 800-852-1453  
E-mail: [johnraymond@grandclassroom.com](mailto:johnraymond@grandclassroom.com)  
Website: [www.grandclassroom.com](http://www.grandclassroom.com)

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Phone: 800-426-6287  
E-mail: [sales@hannainst.com](mailto:sales@hannainst.com)  
Website: [www.hannainst.com](http://www.hannainst.com)

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Houston, TX 77099  
Phone: 832-259-5627  
E-mail: [byilmaz@harmonytx.org](mailto:byilmaz@harmonytx.org)  
Website: [www.harmonytx.org](http://www.harmonytx.org)

Harmony Public Schools are high performing K–12 college preparatory charter schools focusing on math, science, engineering, and computer technologies. Harmony Public Schools promote STEM careers and pathways through an innovative STEM-oriented Project Based Learning approach in many underserved communities throughout Texas, as the state's largest charter operator.

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Institute (HHMI)** #307  
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Chevy Chase, MD 20815  
Phone: 301-215-8619  
E-mail: [biointeractive@hhmi.org](mailto:biointeractive@hhmi.org)  
Website: [www.biointeractive.org](http://www.biointeractive.org)

HHMI's *BioInteractive.org* website brings cutting-edge science into the classroom. Teach ahead of the textbook with free award-winning animations, short films, video clips, virtual labs, interactive features, classroom-ready resources, and activities.

**It's About Time** #401  
333 N. Bedford Rd. E, M, HS  
Mount Kisco, NY 10549  
Phone: 914-273-2233, x535  
E-mail: [afarrell@iat.com](mailto:afarrell@iat.com)  
Website: [www.iat.com](http://www.iat.com)

It's About Time is focused on bringing cutting-edge STEM education materials to K–12. Our materials have been developed in partnership with the National Science Foundation and support the *Next Generation Science Standards* and the *Common Core State Standards, Mathematics*. Please visit us at booth 401 and learn more!

**KidWind Project** #315  
2093 Sargent Ave. E, M, HS  
St. Paul, MN 55105  
Phone: 651-917-0079  
E-mail: [michael@kidwind.org](mailto:michael@kidwind.org)  
Website: [www.kidwind.org](http://www.kidwind.org)

The KidWind Project is a team of teachers, students, engineers, and practitioners exploring the science behind wind and other renewable forms of energy. Our goal is to make renewable energy widely accessible through hands-on activities that are challenging, engaging, and teach basic science and engineering principles.

**King Arthur Flour Bake for  
Good: Kids** #320  
62 Fogg Farm Rd. E, M  
White River Junction, VT 05001  
Phone: 802-526-1837  
E-mail: [paula.gray@kingarthurfour.com](mailto:paula.gray@kingarthurfour.com)  
Website: [www.kingarthurfour.com/learnbakeshare](http://www.kingarthurfour.com/learnbakeshare)

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**K'NEX Education** #512  
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E-mail: [mkratz@knex.com](mailto:mkratz@knex.com)

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**Learning Blade** #308  
 340 Frazier Ave. E, M, HS  
 Chattanooga, TN 37415  
 Phone: 423-521-2309  
 E-mail: [sheila@thinkingmedia.com](mailto:sheila@thinkingmedia.com)  
 Website: [www.learningblade.com](http://www.learningblade.com)

Learning Blade is a unique game-based on-line platform allowing STEM integration into English, math, social studies, and science classrooms from the creators of ACT's Key-Train®. Learning Blade has been validated as a supplemental tool for increasing STEM career awareness and interest by BattelleEd. Exercises support both the CCSS and NGSS.

**LIGO Science Education Center/Caltech** #114  
 19100 LIGO Lane E, M, HS, C  
 Livingston, LA 70754  
 Phone: 225-686-3134  
 E-mail: [wkatzman@ligo-la.caltech.edu](mailto:wkatzman@ligo-la.caltech.edu)  
 Website: [www.ligo-la.caltech.edu](http://www.ligo-la.caltech.edu)

LIGO is a cutting-edge observatory looking for gravitational waves. The LIGO Science Education Center (SEC) uses the resources of LIGO to train teachers in STEM disciplines (in particular physical science and engineering). Teacher programs stress engineering and physical science concepts. LIGO SEC also provides field trips for students

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 PO Box 6606 E, M  
 Lubbock, TX 79493  
 Phone: 806-281-1424  
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 Website: [www.magicmassagepro.com](http://www.magicmassagepro.com)

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 Brooklyn, NY 11201  
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 Lansing, MI 48906  
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## Exhibitors

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HS, C  
1300 145th St. E  
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Nano-Link has created a series of self-contained, complete, and technically sound topical and contextual modules that enable community colleges and high schools to infuse nanotechnology into their curricula. The modules can be integrated with traditional high school sciences as well as more defined topics such as biotech, electronics, or material sciences.

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E-mail: [info@enasco.com](mailto:info@enasco.com)  
Website: [www.eNasco.com](http://www.eNasco.com)

Serving K–12 teachers for more than 70 years, Nasco offers more than 80,000 products for life skills; health/nutrition; family/consumer sciences; physical activities and cooperative games; arts and crafts; special education; early childhood; math; science; and reading. To view or receive a free catalog, visit [eNasco.com](http://eNasco.com) or call 800-558-9595

**National Geographic Learning** #304  
E, M, HS  
20 Channel Center St.  
Boston, MA 02210  
Phone: 888-915-3276  
Website: [ngl.cengage.com](http://ngl.cengage.com)

National Geographic Learning, a part of Cengage Learning, provides quality preK–12, academic, and adult education instructional solutions for reading, writing, science, social studies, ESL/ELD, Spanish/Dual language, advanced and electives, career and technical education, and professional development.

**National Institute of Biomedical Imaging and Bioengineering (NIBIB)/ National Institutes of Health (NIH)** #212  
M, HS, C  
31 Center Dr., Room 1C14  
Bethesda, MD 20892  
Phone: 301-496-9208  
E-mail: [coneyjohnson@mail.nih.gov](mailto:coneyjohnson@mail.nih.gov)  
Website: [www.nibib.nih.gov](http://www.nibib.nih.gov)

NIBIB, part of the National Institutes of Health, is driven by a mission centered on the

convergence of engineering and the physical and life sciences, with a vision of improved global health. NIBIB has useful materials and information for science teachers at the middle school, high school, and undergraduate level.

**National Integrated Cyber Education Research Center (NICERC)** #127  
E, M, HS  
6300 E. Texas St.  
Bossier City, LA 71111  
Website: [www.nicerc.org](http://www.nicerc.org)

The National Integrated Cyber Education Research Center (NICERC) booth will be a portal for teachers, administrators, and others to learn about the exciting opportunities we have available. Our curricula ranges from middle to high school, including middle school STEM courses, physics, cyber science, and advanced mathematics for engineering and science. Our curricula design team will be staffing the booth and ready to answer any questions you may have. Projects and content will be showcased through interactive displays. Come visit us to experience a small piece of our curricula and—keep in mind—we will have some giveaways at the booth, too!

**NGSS@NSTA** #121  
E, M, HS, C  
1840 Wilson Blvd.  
Arlington, VA 22201  
Phone: 703-243-7100  
E-mail: [ngss@nsta.org](mailto:ngss@nsta.org)  
Website: [ngss.nsta.org](http://ngss.nsta.org)

How can NSTA help you prepare for the *Next Generation Science Standards*? Stop by our booth to hear the latest news about state adoption and check out a sampling of NSTA resources dedicated to helping teachers understand and implement the new standards.

**Nomad Press** #204  
E, M  
2456 Christian St.  
White River Junction, VT 05001  
Phone: 802-649-1995  
E-mail: [rachel@nomadpress.net](mailto:rachel@nomadpress.net)  
Website: [www.nomadpress.net](http://www.nomadpress.net)

*Common Core State Standards*, the *Next Generation Science Standards*, and STEM education all agree that Project Based Learning is a key to keeping students motivated and engaged. Nomad's unique approach grounds kids in factual knowledge while allowing them the space to be curious, creative, and critical thinkers.

**NOVA Education** #229  
E, M, HS, C  
1 Guest St.  
Boston, MA 02135  
Website: [www.pbs.org/wgbh/nova/education](http://www.pbs.org/wgbh/nova/education)

The NOVA Education site is a collection of NOVA resources for bringing science, technology, and engineering to life in educational settings. This free digital library is tied to teaching standards and includes video, audio segments, interactives, and much more.

**NSTA Professional Programs** #120  
1840 Wilson Blvd.  
Arlington, VA 22201  
Phone: 703-312-9270  
E-mail: [danderson@nsta.org](mailto:danderson@nsta.org)  
Websites: [www.nsta.org/academy](http://www.nsta.org/academy); [learning.center.nsta.org](http://learning.center.nsta.org)

The NSTA Professional Learning team supports STEM educators through a variety of face-to-face, online, and blended opportunities tailored to their specific needs. The Learning Center is NSTA's online learning portal designed to enhance the content and pedagogical knowledge of teachers of STEM. Visit our booth to learn more about the professional learning opportunities available through NSTA.

**Ochsner Clinic Foundation** #221  
HS  
1319 Jefferson Hwy.  
New Orleans, LA 70121  
Phone: 504-842-5321  
E-mail: [asharai@ochsner.org](mailto:asharai@ochsner.org)  
Website: [www.ochsner.org](http://www.ochsner.org)

Ochsner Clinic Foundation and Louisiana State University Health Sciences Center's BESTScience! Program—funded through NIH's Science Education Partnership Award (SEPA) program—aims to advance interest in biomedical research and health sciences from Louisiana high school students and to ultimately stimulate further education and vocation in these areas. By giving area science teachers the tools to teach more specialized, hands-on curricula in their classrooms, the program expects to reach a greater number of students on a deeper level.



**Otto Trading, Inc.** #115  
 1921 Carnegie Ave., Suite C  
 Santa Ana, CA 92705  
 Phone: 714-540-5595  
 E-mail: [ademkutlug@gmail.com](mailto:ademkutlug@gmail.com)  
 Website: [www.irestmassager.com](http://www.irestmassager.com)

We are a manufacturer and distributor of handheld portable digital massagers. In business for three years, all of our products are 510(k) approved by the FDA. Stop by and see our mini digital massagers, pads, slippers, and belts.

**PASCO scientific** #407  
 10101 Foothills Blvd. E, M, HS, C  
 Roseville, CA 95747  
 Phone: 800-772-8700  
 E-mail: [sales@pasco.com](mailto:sales@pasco.com)  
 Website: [www.pasco.com](http://www.pasco.com)

For 50 years, PASCO has provided the science education community with innovative solutions that actively engage students in scientific and engineering practices. Powered by SPARKvue®, our state-of-the-art learning environment, integrated content, and sensor-based science are brought together. SPARKvue runs on all platforms; including Mac, PC, Netbooks, Android tablets, and iPads.

**Paxton/Patterson** #318  
 7523 S. Sayre Ave. M, HS  
 Chicago, IL 60638  
 Phone: 800-323-8484  
 E-mail: [bud@paxpat.com](mailto:bud@paxpat.com)  
 Website: [www.paxtonpatterson.com](http://www.paxtonpatterson.com)

Our blended curriculum model combines the benefits of cloud-based computing with Project Based Learning for STEM in a collaborative environment. Anywhere! Anytime! Any Device! Individualized learning with a personal digital tutor using predictive analytics and real-time remediation achieve extraordinary results for students.

**PCS Edventures** #522  
 345 Bobwhite Court, Suite 200 E, M, HS  
 Boise, ID 83706  
 Phone: 800-429-3110  
 E-mail: [haley@edventures.com](mailto:haley@edventures.com)  
 Website: [www.edventures.com](http://www.edventures.com)

For 25 years, PCS Edventures has inspired K–12 students to develop a passion and understanding in science, technology, engineer-



ing, and mathematics (STEM). With exciting hands-on activities, curricula, and manipulatives like LEGO®, K’NEX, and fischertechnik, PCS Edventures makes learning fun and interactive for students.

**PEPCO, Inc.** #501  
 1615 Robertson Rd. E, M, HS, C  
 Moberly, MO 65270-0457  
 Phone: 800-568-1067  
 E-mail: [dave@pepcoinc.com](mailto:dave@pepcoinc.com)  
 Website: [www.pepcoinc.com](http://www.pepcoinc.com)

PEPCO is a mass customized manufacturer of quality science tables and lab furniture located in central Missouri. Introducing our STEM table in 2010, PEPCO recognized the need for flexible furniture to meet the emerging needs

of STEM education. Factory direct pricing assures value for our customers.

**Pitsco Education** #423  
 915 E. Jefferson St. E, M, HS  
 Pittsburg, KS 66762  
 Phone: 620-231-0000  
 E-mail: [aricks@pitsco.com](mailto:aricks@pitsco.com)  
 Website: [www.pitsco.com](http://www.pitsco.com)

Experimentation and scientific investigations are the starting point of science knowledge. That’s why they are the foundation of Pitsco’s science solutions for K–12. Students gain critical-thinking, communication, and teamwork skills while also improving their literacy and *CCSS Mathematics* understanding.

## Exhibitors

**Project Lead The Way #513**  
3939 Priority Way S. Dr., Suite 200 E, M, HS  
Indianapolis, IN 46240  
Phone: 317-669-0843  
E-mail: [lgreenaway@pltw.org](mailto:lgreenaway@pltw.org)  
Website: [www.pltw.org](http://www.pltw.org)

Project Lead The Way (PLTW) is the nation's leading provider of STEM programs. PLTW's world-class curriculum and high-quality teacher professional development, combined with an engaged network of educators and corporate partners, help students develop the skills to succeed in our global economy. More than 5,200 schools across the U.S. offer PLTW courses to their students.

**Renaissance Learning #506**  
2911 Peach St. E, M, HS  
Wisconsin Rapids, WI 54494  
Phone: 715-424-3636  
E-mail: [julie.vevtrone@renlearn.com](mailto:julie.vevtrone@renlearn.com)  
Website: [www.renlearn.com](http://www.renlearn.com)

Renaissance Learning™ is a leading provider of cloud-based assessment and teaching and learning solutions that fit the K–12 classroom, improve school performance, and accelerate learning for all. Renaissance Learning enables educators to deliver highly differentiated and timely instruction while driving personalized student practice in reading, writing, and math every day.

**RobotsLAB US Inc. #322**  
75 Broadway St., Suite 202 M, HS, C  
San Francisco, CA 94111  
Phone: 415-200-6864  
E-mail: [elad@robotslab.com](mailto:elad@robotslab.com)  
Website: [www.robotslab.com](http://www.robotslab.com)

RobotsLAB introduces STEM-U, a holistic solution for STEM education. Imagine being taught quadratic equations by quadcopter. The RobotsLAB BOX is a revolutionary teaching aid that demonstrates core concepts for math and science using robots. The easy-to-use tablet includes interactive lessons that bring the robots to life, helping students understand why math is relevant to their life.

**Rockin' Feet #426**  
6130 W. Flamingo Rd., PMB 460  
Las Vegas, NV 89103  
Phone: 702-871-6377  
E-mail: [vidavette@msn.com](mailto:vidavette@msn.com)  
Website: [www.rockinfeet.com](http://www.rockinfeet.com)

Rockin' Feet patent-pending Glycerin Insoles provide cushion massage and arch support. Washable. EMS (electromagnetic massage stimulator) eases tense and sore muscles, while building muscle and increasing blood flow.

**St. Louis College of Pharmacy #108**  
4588 Parkview Place HS  
St. Louis, MO 63110  
Phone: 314-446-8333  
E-mail: [jeremy.keye@stlcp.edu](mailto:jeremy.keye@stlcp.edu)  
Website: [www.stlcp.edu](http://www.stlcp.edu)

Founded in 1864, the St. Louis College of Pharmacy is the fourth-oldest and 10th-largest college of pharmacy in America. The College primarily admits students directly from high school, and the curriculum integrates the liberal arts and sciences with a professional program leading to a Doctor of Pharmacy (Pharm.D.) degree.

**Sheldon Laboratory Systems #123**  
102 Kirk St. E, M, HS, C  
Crystal Springs, MS 39059  
Phone: 601-892-7166  
E-mail: [molstad@sheldonlabs.com](mailto:molstad@sheldonlabs.com)  
Website: [www.sheldonlabs.com](http://www.sheldonlabs.com)

Sheldon Laboratory Systems designs and manufactures highly innovative and high-quality laboratory furniture and furnishings.

**SkyLight Scope #112**  
499 Embarcadero, Box 1-1 E, M, HS, C  
Oakland, CA 94606  
E-mail: [info@skylightscope.com](mailto:info@skylightscope.com)  
Website: [www.skylightscope.com](http://www.skylightscope.com)

SkyLight Scope makes the universal microscope-to-smartphone adapter, designed to bring science education to the real world

**SmartSchool Systems #313**  
1701 Northpark Dr., Suite 12 E, M, HS, C  
Kingwood, TX 77339  
Phone: 281-312-1297  
E-mail: [david@smartschoolsystems.com](mailto:david@smartschoolsystems.com)  
Website: [www.smartschoolsystems.com](http://www.smartschoolsystems.com)

We offer handheld technology for the science classroom. The SmartMicroScope iGO connects to iPad and other mobile devices wirelessly. Our high-resolution SmartMicroScope 5M connects to computers and the Chromebook. In addition, our dataloggers are versatile and powerful.

**Space Camp® & Aviation Challenge® #208**  
1 Tranquility Base  
Huntsville, AL 35805  
Phone: 256-721-7124  
E-mail: [tomw@spacecamp.com](mailto:tomw@spacecamp.com)  
Website: [www.spacecamp.com](http://www.spacecamp.com)

We will showcase our STEM programs for students and educators.

**STEAM Education #518**  
PO Box 1415 E, M, HS  
Northampton, MA 01061  
E-mail: [bookings@steamedu.com](mailto:bookings@steamedu.com)  
Website: [www.steamedu.com](http://www.steamedu.com)

STEAM Education offers various professional and curriculum development services and kits for educators with programs to move toward using an integrated Science-Technology-Engineering-Arts-Mathematics framework to better provide career readiness and FUNCTIONAL literacy for students. The number of certified professionals around the U.S. and abroad in this network is rapidly growing.

**The STEM Academy, Inc. #429**  
6300 Sagewood Dr., Suite H #235 E, M, HS, C  
Park City, UT 84098  
Phone: 888-STEM101  
E-mail: [info@stem101.org](mailto:info@stem101.org)  
Website: [www.stem101.org](http://www.stem101.org)

The STEM Academy as a national nonprofit is dedicated to improving STEM literacy for all students. Our meta-disciplinary, state and national standards-based K–16 STEM curricula creates student pathways for industry and postsecondary advancement. We represent a national next-generation high-impact academic model targeting all schools and for all students.

**STEM Skills Workshop #203**  
20533 Biscayne Blvd., Suite 1127 HS  
Aventura, FL 33180  
Phone: 786-245-4577  
E-mail: [eli@stemskillsworkshop.com](mailto:eli@stemskillsworkshop.com)  
Website: [www.stemskillsworkshop.com](http://www.stemskillsworkshop.com)

**STEMfinity** #105  
 5465 E. Terra Linda Way E, M, HS  
 Nampa, ID 83687  
 Phone: 800-985-7836  
 E-mail: [support@stemfinity.com](mailto:support@stemfinity.com)  
 Website: [www.stemfinity.com](http://www.stemfinity.com)

STEMfinity provides more than 20,000 project-based STEM resources with curricula to teach preK–12 students STEM, robotics, electronics, alternative energy, 3-D printing, RC, rocketry, and beyond! STEMfinity’s hands-on educational kits are a perfect resource for underrepresented and at-risk students to develop an understanding of STEM subjects through project-based learning...inspiring students to pursue STEM careers.

**Sterling High School** #433  
 308 E. Washington HS  
 Sterling, KS 67579  
 Phone: 620-278-2171  
 E-mail: [whislerd@usd376.com](mailto:whislerd@usd376.com)  
 Website: [www.usd376.com](http://www.usd376.com)

Energy 101 and the Sterling High School Chevy Volt Project—have you seen one of the newest innovations in transportation? Students at Sterling High School in Kansas are doing a case study on it! Stop by our booth to see our Volt and what the science students are doing through this project.

**Stevens Institute of Technology** #503  
 Castle Point on Hudson M  
 Hoboken, NJ 07030

WaterBotics is an underwater robotics curriculum, developed with NSF funding, that uses the LEGO® MINDSTORMS® system and is targeted at middle school and high school students. This exhibit will include a demonstration of sample robots and provide details of the curriculum.

**STR School & Science Technology Resources** #327  
 6630 Hwy. 9, Suite 201 E, M, HS  
 Felton, CA 95018  
 Phone: 831-430-9061  
 E-mail: [bhoffman@strscopes.com](mailto:bhoffman@strscopes.com)  
 Website: [www.schooltr.com](http://www.schooltr.com)

STR specializes in handheld digital and video cameras for the classroom—the Scope-On-A-Rope, Dlite Microscope, and ProScope. These multi-function classroom cameras/new gen-



eration microscopes are fun, easy to use, versatile classroom tools. Use them as handheld microscopes, document cameras, and digital classroom cameras. Our exclusive education kits include a variety of lenses, accessories, and curricular materials to provide engaging classroom experiences.

**StratoStar** #323  
 14350 Mundy Dr., Suite 800 M, HS  
 Noblesville, IN 46060  
 Phone: 765-382-0452  
 E-mail: [jkrueger@stratostar.net](mailto:jkrueger@stratostar.net)  
 Website: [www.stratostar.net](http://www.stratostar.net)

StratoStar assists education and administrators in the implementation of STEM hands-on High-Altitude ballooning projects—empowering grades 6–12 teachers to unlock student curiosity while teaching standards, problem solving, and collaborative teamwork skills. Students become scientists, engineers, and mathematicians while using technology to plan and execute real missions to the edge of space using StratoStar’s High-Altitude Ballooning Platforms and materials. Stop by to learn more

**Swift Optical Instruments, Inc.** #406  
 6508 Tri-County Pkwy. M, HS, C  
 Schertz, TX 78154  
 Phone: 877-967-9438  
 E-mail: [cynthia@swiftoptical.com](mailto:cynthia@swiftoptical.com)  
 Website: [www.swiftoptical.com](http://www.swiftoptical.com)

A leader in the manufacturing of microscopes,

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**Teachers Latin America –International Jobs** #227  
 5108 Fuqua Gardens View E, M, HS  
 Houston, TX 77045  
 Phone: 832-643-5201  
 E-mail: [cindywebber13@gmail.com](mailto:cindywebber13@gmail.com)  
 Website: [innovative-english.com](http://innovative-english.com)

Teachers Latin America recruits educators in the U.S. and Canada for teaching and administrative positions in Mexico and other countries in Latin America. We recruit for international and bilingual schools with positions ranging from K–12 in all subject areas. Classes are taught in English. Salary and benefit packages are competitive.

**Texas Instruments** #413  
 13532 N. Central Expresswy. M, HS  
 Dallas, TX 75251  
 Phone: 800-TICARES  
 E-mail: [ti-cares@ti.com](mailto:ti-cares@ti.com)  
 Website: [education.ti.com](http://education.ti.com)

Texas Instruments provides technology, content, and professional development for science and math classrooms.

## Exhibitors

**Toshiba/NSTA ExploraVision #118**  
1840 Wilson Blvd. E, M, HS  
Arlington, VA 22201  
Phone: 800-Explor9  
E-mail: [exploravision@nsta.org](mailto:exploravision@nsta.org)  
Website: [www.exploravision.org](http://www.exploravision.org)

The ExploraVision K–12 competition challenges students in the U.S. and Canada to research a technology of interest and explore what that technology could be like 20 years from now. Up to \$240,000 in savings bonds (at maturity) are awarded annually to student winners for the most innovative ideas that combine imagination with the tools of science.

**TPS Publishing, Inc. #109**  
24307 Magic Mountain Pkwy., #62 E, M, HS  
Valencia, CA 91355  
Phone: 866-417-9384  
E-mail: [ian@tpsublishing.com](mailto:ian@tpsublishing.com)  
Website: [www.tpsublishing.com](http://www.tpsublishing.com)

We offer creative core curricula for mathematics along with K–8 STEM, Literacy, and Arts, as adopted in California, Florida, and Georgia. For science and math, we also have K–8 TEKS-aligned programs as adopted in Texas together with forensics science G8–12. Our STEM projects by domain are exactly aligned to the CCSS and TEKS plus Algebra I as well as CeMaST professional development.

**Transatlantic Outreach Program #509**  
812 7th St. NW E, M, HS  
Washington, DC 20001  
Phone: 202-289-1200  
E-mail: [syabroff@washington.goethe.org](mailto:syabroff@washington.goethe.org)  
Website: [www.goethe.de/top](http://www.goethe.de/top)

The Transatlantic Outreach Program provides free curriculum and study tours to promote education about Germany and provide awareness within the context of STEM education, vocational training, corporate social responsibility, environmental sustainability, geography, and more.

**U.S. Dept. of Defense Education #226**  
**Activity** E, M, HS  
4800 Mark Center Dr.  
Alexandria, VA 22350  
Phone: 571-372-0801  
E-mail: [katherine.wallace@hq.dodea.edu](mailto:katherine.wallace@hq.dodea.edu)  
Website: [www.dodea.edu](http://www.dodea.edu)

**U.S. Dept. of Energy, Office #214**  
**of Nuclear Energy** M  
1000 Independence Ave. SW, NE-20  
Washington, DC 20585  
Phone: 301-903-8858  
E-mail: [harnessedatom@nuclear.energy.gov](mailto:harnessedatom@nuclear.energy.gov)  
Website: [energy.gov/ne/services/harnessed-atom](http://energy.gov/ne/services/harnessed-atom)

Need free resources to teach integrated energy content and concepts? Visit us to see the new Harnessed Atom curriculum materials for middle school and learn about the upcoming high school curriculum materials. Preview the materials and see the related activities in action! Harnessed Atom for Middle School is available now!

**Vernier Software & Technology #300**  
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Beaverton, OR 97005  
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E-mail: [info@vernier.com](mailto:info@vernier.com)  
Website: [www.vernier.com](http://www.vernier.com)

Vernier Software & Technology is a leading innovator of scientific data-collection technology. Focused on STEM, Vernier is dedicated to developing creative ways to teach and learn using hands-on science. Vernier creates easy-to-use and affordable science interfaces, sensors, and graphing/analysis software. Vernier's technology-based solutions enhance STEM education, increase learning, and build students' critical-thinking skills.

**Wake Forest Problem-Based #427**  
**Learning** E, M  
Wake Forest School of Medicine  
Medical Center Blvd.  
Winston Salem, NC 27106  
Phone: 336-713-7723  
E-mail: [wfpbl@wakehealth.edu](mailto:wfpbl@wakehealth.edu)  
Website: [www.wakeproblembasedlearning.com](http://www.wakeproblembasedlearning.com)

Wake Forest Problem-Based Learning is a student-centered methodology focused on solving real-world problems. Problem-Based

Learning (PBL) was first implemented by medical schools in the United States and is now being adopted in innovative K–12 schools across the nation as a vehicle to help implement the *Common Core State Standards*.

**WhiteBox Learning #218**  
14600 Woodbluff Trace E, M, HS  
Louisville, KY 40245  
Phone: 800-592-3460, x1  
E-mail: [graham@whiteboxlearning.com](mailto:graham@whiteboxlearning.com)  
Website: [www.whiteboxlearning.com](http://www.whiteboxlearning.com)

The “E” in STEM, WhiteBox Learning is a standards-based, web-based, “3-D STEM ENGINEERING” learning system that allows students to ENGINEER and simulate their designs virtually, before building. Students compete “virtually,” from any browser, 24/7, all around the world...how cool is that?! We offer Gliders2.0, Prosthetics2.0, Dragster2.0, Structures2.0, GreenCar2.0, Rockets2.0, MousetrapCar2.0, and Rover2.0.

**WorldStrides #514**  
218 W. Water St., Suite 400 M, HS  
Charlottesville, VA 22902  
Phone: 855-868-5490  
E-mail: [customerservice@worldstrides.org](mailto:customerservice@worldstrides.org)  
Website: [www.worldstridesdiscovernow.org](http://www.worldstridesdiscovernow.org)

WorldStrides DiscoverNow! programs are part of the exciting lineup of education travel opportunities offered through WorldStrides, the nation's oldest and largest student travel organization. Founded in 1967, WorldStrides is passionate about creating life-changing learning experiences for every student. WorldStrides has facilitated programs for six million participants to destinations around the world.

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### 3D Molecular Designs, LLC (Booth #319)

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Thursday, May 15	11:30 AM–12:30 PM	203, Conv. Center	Practice Makes Perfect: Modeling as an NGSS Authentic Practice of Science (p. 29)
Friday, May 16	10:00–11:00 AM	203, Conv. Center	Be the First to Test Our Dynamic DNA Discovery Kit (p. 45)

### Accelerate Learning (Booth #412)

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### ANATOMY IN CLAY® Learning System (Booth #310)

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### Bio-Rad Laboratories (Booth #415)

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### Capstone Classroom (Booth #418)

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### Carolina Biological Supply (Booths #101)

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Friday, May 16	1:00–2:00 PM	208, Conv. Center	Investigating STEM and the NGSS with CPO Science Link™ (p. 54)

### Creative Learning Corp. Bricks 4 Kidz® (Booth #526)

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### Delta Education/School Specialty Science–FOSS (Booth #301)

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### Fisher Science Education (Booth #419)

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Friday, May 16	10:00–11:00 AM	212, Conv. Center	The STEM Design Challenge (p. 46)
Friday, May 16	11:30 AM–12:30 PM	212, Conv. Center	Chemical and Environmental Technology (p. 50)

### Flinn Scientific, Inc. (Booth #200)

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Thursday, May 15	10:00–11:00 AM	212, Conv. Center	Flinn Scientific Presents Activities to Integrate STEM Education (p. 25)
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### Frey Scientific/School Specialty Science (Booth #301)

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Thursday, May 15	1:00–2:00 PM	208, Conv. Center	Solving the Mystery of STEM Using Forensic Science and Digital Microscopy (p. 33)
Friday, May 16	2:30–3:30 PM	208, Conv. Center	Solving the Mystery of STEM Using Forensic Science and Digital Microscopy (p. 55)

### Grand Classroom (Booth #408)

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Thursday, May 15	11:30 AM–12:30 PM	204, Conv. Center	National Park Adventures with a STEM Twist (p. 29)
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### Howard Hughes Medical Institute (Booth #307)

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Friday, May 16	10:00–11:00 AM	209, Conv. Center	Evolving Switches, Evolving Bodies: A Story of Gene Regulation and Evolution (p. 45)
Friday, May 16	11:30 AM–12:30 PM	209, Conv. Center	Are Humans Still Evolving? Genetic Evidence of Human Evolution (p. 49)
Friday, May 16	1:00–2:00 PM	209, Conv. Center	When Good Cells Go Bad: What Cancer Can Teach Students About Cell Biology and Genetics (p. 54)

### It's About Time (Booth #401)

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Friday, May 16	11:30 AM–12:30 PM	211, Conv. Center	Bringing Technology into Your STEM Classroom (p. 49)
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### KidWind Project (Booth #315)

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Thursday, May 15	1:00–2:00 PM	209, Conv. Center	Renewable Energy with Vernier (p. 33)
Thursday, May 15	2:30–3:30 PM	209, Conv. Center	Wind Sail Cars (p. 34)
Friday, May 16	11:30 AM–12:30 PM	207, Conv. Center	Wind-energized Classroom (p. 49)
Friday, May 16	1:00–2:00 PM	207, Conv. Center	MacGyver Windmills (p. 54)

### K'NEX Education (Booth #512)

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Thursday, May 15	10:00–11:00 AM	213, Conv. Center	Forces, Energy, and Motion (p. 26)
Thursday, May 15	11:30 AM–12:30 PM	213, Conv. Center	Exploring Machines (p. 30)
Thursday, May 15	1:00–2:00 PM	213, Conv. Center	Introduction to Simple Machines (p. 33)
Thursday, May 15	2:30–3:30 PM	213, Conv. Center	Renewable Energy (p. 34)
Thursday, May 15	4:00–5:00 PM	213, Conv. Center	K'NEX® Computer Control/STEM Explorations (p. 37)
Friday, May 16	10:00–11:00 AM	213, Conv. Center	Exploring Machines (p. 46)
Friday, May 16	11:30 AM–12:30 PM	213, Conv. Center	K'NEX® Computer Control/STEM Explorations (p. 50)
Friday, May 16	1:00–2:00 PM	213, Conv. Center	Renewable Energy (p. 54)
Friday, May 16	2:30–3:30 PM	213, Conv. Center	Forces, Energy, and Motion (p. 55)

### National Geographic Learning (Booth #304)

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Friday, May 16	1:00–2:00 PM	205, Conv. Center	National Geographic Explorers—From the World to Your Classroom! (p. 54)
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## Index of Exhibitor Workshops

### The STEM Academy, Inc. (Booth #429)

Thursday, May 15	10:00–11:00 AM	205, Conv. Center	Hands-On Engineering Activities for the Classroom (p. 25)
Friday, May 16	10:00–11:00 AM	205, Conv. Center	Hands-On Engineering Activities for the Classroom (p. 45)

### StratoStar (Booth #323)

Friday, May 16	11:30 AM–12:30 PM	205, Conv. Center	Real-World STEM Missions to the Edge of Space (p. 49)
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### Swift Optical Instruments, Inc. (Booth #406)

Thursday, May 15	1:00–2:00 PM	203, Conv. Center	Experience the STEM Wi-Fi Classroom: Creating a Success Story for Your School (p. 33)
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### Vernier Software & Technology (Booth #300)

Thursday, May 15	10:00–11:00 AM	209, Conv. Center	Vernier's Digital Tools for STEM Education (p. 25)
Thursday, May 15	11:30 AM–12:30 PM	209, Conv. Center	iPad and Wireless Sensors with Vernier (p. 30)

### WhiteBox Learning (Booth #218)

Thursday, May 15	10:00–11:00 AM	204, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 25)
Friday, May 16	10:00–11:00 AM	204, Conv. Center	The “E” in STEM: 3-D STEM Engineering (p. 45)



# Schedule at a Glance

## Primary Strand

### Thursday

10:30–11:30 AM	P–K	216, Conv. Center	Beyond Biology: Exploring Physical Science and Engineering in the Early Education Classroom and Gardens (p. 28)
3:00–4:00 PM	P	216, Conv. Center	Integrating Science, Technology, and Engineering in PreK: STEp Up Your Practice! (p. 34)
4:15–5:15 PM	K–3	229, Conv. Center	How Is a Poet Like a Scientist? A + STEM Connects Literacy and Science (p. 38)
4:15–5:15 PM	1–5	222, Conv. Center	Sailing Through STEM! Seamlessly Integrating Engineering and Math for Elementary Students (p. 40)

### Friday

10:30–11:30 AM	K–3	216, Conv. Center	Let's S.A.I.L. (Science Arts Integrated in Literacy) (p. 48)
10:30–11:30 AM	P–5	222, Conv. Center	Engineer a Seed! The Engineering Process at Work in a K–2 Life Sciences Unit (p. 48)
10:30–11:30 AM	P–2/C	R06, Conv. Center	Growing Up Wild: Hitting All of the Elements of STEM (p. 48)
11:45 AM–12:45 PM	P–2	216, Conv. Center	Using Literature to Spark Engineering Designs (p. 52)
3:00–4:00 PM	P–4	216, Conv. Center	Strategies for Successful Place-based Learning (p. 55)
3:00–4:00 PM	K–5	222, Conv. Center	Every Child Is an Engineer! (p. 57)
4:15–5:15 PM	P	216, Conv. Center	Strategies for Effectively Infusing STEM into the Early Childhood Classroom (p. 58)

## Upper Elementary Strand

### Thursday

10:30–11:30 AM	3–5	220, Conv. Center	Plants, Physical Structures, and Everyday Tools: Helping Children Understand the Impact of STEM and the Essential Integration of All STEM Disciplines (p. 26)
10:30–11:30 AM	2–5	222, Conv. Center	Full STEAM Ahead (p. 26)
10:30–11:30 AM	2–5	231, Conv. Center	Assessment Tools Designed for Grades 2–5 (p. 27)
11:45 AM–12:45 PM	3–5	220, Conv. Center	STEM in Sports: Are You Ready for Some Football? (p. 30)
11:45 AM–12:45 PM	K–5	222, Conv. Center	The Magnetic Fields of Engineering and Science: How Engineering Design Challenges Can Inspire Inquiry (p. 31)
11:45 AM–12:45 PM	3–5	231, Conv. Center	Developing an Integrated STEM Curriculum on a Budget (p. 31)
11:45 AM–12:45 PM	K–8	R04, Conv. Center	NSTA Press® Session: Find STEM in the School Yard with Outdoor Science (p. 32)
11:45 AM–12:45 PM	2–8/C	R09, Conv. Center	Bugscope: Remote Scanning Electron Microscopy for Classroom Inquiry Practices (p. 31)
3:00–4:00 PM	K–8	220, Conv. Center	STEM—What Does It Really Look Like in the Classroom? (p. 35)
3:00–4:00 PM	K–8	221, Conv. Center	Teaching Science and Engineering Practices in the Elementary Classroom (p. 36)
3:00–4:00 PM	P–9	222, Conv. Center	Hands-On Performance Assessment of the CCSS and NGSS: An Effective Formative Assessment Strategy (p. 36)
4:15–5:15 PM	K–5	216, Conv. Center	Launching an Elementary STEM Program (p. 38)
4:15–5:15 PM	3–6	221, Conv. Center	Full STEAM Ahead! Integrating Music Instruction into STEM Hands-On Projects (p. 40)

### Friday

10:30–11:30 AM	3–5	220, Conv. Center	How to Implement an Effective STEM Program in Your School (p. 47)
10:30–11:30 AM	3–6	221, Conv. Center	Growing Through STEM (p. )
11:45 AM–12:45 PM	3–8	220, Conv. Center	Designing STEM Adventures Using the Legacy Cycle (p. 50)



## Schedule at a Glance Upper Elementary Strand

11:45 AM–12:45 PM	K–5	221, Conv. Center	<i>Cajun Night Before Christmas</i> STEM Unit (p. 52)
11:45 AM–12:45 PM	3–5	222, Conv. Center	Scientific Argumentation Using Online Simulations (p. 52)
11:45 AM–12:45 PM	3–6	R01, Conv. Center	How to Engage Every Student in STEM (p. 53)
3:00–4:00 PM	3–5	221, Conv. Center	Problem-Based Learning: Adding Rigor and Relevance to STEM Instruction (p. 57)
3:00–4:00 PM	K–6	R01, Conv. Center	The Global Cardboard Challenge: Our Town (p. 56)

### Middle Level Strand

#### Thursday

10:30–11:30 AM	6–9	225, Conv. Center	Using Newer Google Apps to Enhance Science and Engineering Practices in Middle School (p. 27)
10:30–11:30 AM	6–8	226, Conv. Center	Beginning a STEM Program for Students with Special Needs (p. 27)
10:30–11:30 AM	4–8	227, Conv. Center	NASA STEM Online Educator Professional Development Tour (p. 27)
10:30–11:30 AM	6–8	228, Conv. Center	Structure vs. Inquiry: Finding the Right Balance to Support STEM in the Classroom (p. 28)
10:30–11:30 AM	6–9	230, Conv. Center	The Harnessed Atom: New Ideas, Tools, and Resources for Teaching Nuclear Science and Energy as Middle School STEM Extension (p. 27)
10:30–11:30 AM	6–9	R02, Conv. Center	Bridging STEM into the Core Content Areas (p. 28)
10:30–11:30 AM	6–8	R03, Conv. Center	Navigate Between Weather and Climate Data Simply (p. 29)
10:30–11:30 AM	5–8	R04, Conv. Center	Black Holes, Exploding Stars, and Children! Oh My! (p. 29)
10:30–11:30 AM	P–12	R05, Conv. Center	If They Make It, They Will Learn: The Maker Movement and STEM (p. 29)
10:30–11:30 AM	5–12	R09, Conv. Center	Custom Science e-Textbooks: Create the Perfect Textbook for Your Course! (p. 28)
11:45 AM–12:45 PM	4–8	225, Conv. Center	Citizens in the Curriculum and the Cloud (p. 30)
11:45 AM–12:45 PM	6–12	226, Conv. Center	Growing with Water: Hydroponics in the Classroom (p. 30)
11:45 AM–12:45 PM	K–12	227, Conv. Center	Using the iPad in a Science Classroom (p. 31)
11:45 AM–12:45 PM	6–8	228, Conv. Center	Using the Engineering Design Process to Engage Middle School Students (p. 32)
11:45 AM–12:45 PM	5–8	230, Conv. Center	“Justin” Time (p. 31)
11:45 AM–12:45 PM	5–8	R02, Conv. Center	Engage, Explore: Incredible STEM Investigations! (p. 32)
11:45 AM–12:45 PM	4–8	R03, Conv. Center	S.T.E.M. in Skateboarding? Stoked! (p. 32)
11:45 AM–12:45 PM	4–C	R05, Conv. Center	Student Learning Through Dynamic Mapping: Classroom-based Solutions for Improving Communities (p. 32)
3:00–4:00 PM	5–9	225, Conv. Center	Building a Full Head of STEAM (p. 35)
3:00–4:00 PM	4–9/C	226, Conv. Center	Will It Stand? Seventh-Graders Locate an Oceanfront Home (p. 35)
3:00–4:00 PM	5–8	227, Conv. Center	NASA Engineering Design: The Next Generation of STEM Learning (p. 35)
3:00–4:00 PM	3–8	228, Conv. Center	Designing STEM Adventures Using the Legacy Cycle (p. 35)
3:00–4:00 PM	5–8	229, Conv. Center	Molecular Modeling (p. 35)
3:00–4:00 PM	5–8/C	R01, Conv. Center	Organizing a Middle School Family STEM Night (p. 36)
3:00–4:00 PM	6–11	R02, Conv. Center	Teaching Thinking While You’re Tinkering: Structuring Projects to Introduce “Just in Time” Engineering Tools (p. 37)
3:00–4:00 PM	5–8	R03, Conv. Center	Shaping Engineers and Problem Solvers (p. 37)
3:00–4:00 PM	5–9	R04, Conv. Center	Heads Up: Building a Better Bicycle Helmet (p. 37)
3:00–4:00 PM	6–9	R05, Conv. Center	Formative Assessment That Works for Middle School Math Teachers (p. 37)
4:15–5:15 PM	5–8	225, Conv. Center	Whole-School STEM: New Tools for Student-centered Learning (p. 38)
4:15–5:15 PM	5–9/C	226, Conv. Center	From Mistakes to Mastery—Using Scientific Inquiry for Better Learning and Teaching (p. 38)
4:15–5:15 PM	6–9	227, Conv. Center	Smart STEM Targets Aim for Student Success (p. 39)
4:15–5:15 PM	6–8	228, Conv. Center	Innovation in STEM Learning: Going Green! Middle Schoolers Out to Save the World (MSOSW) (p. 39)
4:15–5:15 PM	5–9	229, Conv. Center	Coding Computer Games to Motivate Middle School Science Students (p. 39)
4:15–5:15 PM	6–9	R02, Conv. Center	Can Venice Be Saved from Sea-Level Rise? (p. 40)
4:15–5:15 PM	6–8	R03, Conv. Center	Origami in Science and Engineering (p. 40)

## Schedule at a Glance Middle Level Strand

4:15–5:15 PM	4–8	R04, Conv. Center	Beginners Guide: Engaging Teachers in STEM Projects (p. 40)
4:15–5:15 PM	5–9	R05, Conv. Center	Family STEM Night: Creating a Successful Experience (p. 40)

### Friday

10:30–11:30 AM	5–12	227, Conv. Center	Using Technology and Flipped Learning to Engage Students in Improving Their Community (p. 47)
10:30–11:30 AM	6–8	228, Conv. Center	Finding Time for STEM (p. 47)
10:30–11:30 AM	1–12	229, Conv. Center	After-School STEM Clubs: Winning in Overtime (p. 47)
10:30–11:30 AM	6–9	230, Conv. Center	Transform Traditional Lessons into STEM Activities with Pizzazz! (p. 47)
10:30–11:30 AM	6–9	R03, Conv. Center	Forces, Motion, and the Solar System (p. 48)
10:30–11:30 AM	6–10	R04, Conv. Center	Use Data Set to Foster Understanding of Ecology, Ecosystems, and Biological Invasions (p. 48)
11:45 AM–12:45 PM	G	225, Conv. Center	Environmental Ed, PBLs, and STEM, Oh My! (p. 51)
11:45 AM–12:45 PM	5–12	227, Conv. Center	Fostering a Schoolwide STEM Culture Among Staff and Students (p. 51)
11:45 AM–12:45 PM	6–12	228, Conv. Center	Additive Manufacturing—From Bytes to Bits (p. 51)
11:45 AM–12:45 PM	6–10	230, Conv. Center	Girls in Science Day (p. 51)
11:45 AM–12:45 PM	6–8	R02, Conv. Center	Engineering in Out-of-School Time (p. 53)
11:45 AM–12:45 PM	6–9	R03, Conv. Center	Angles and Airplanes (p. 53)
11:45 AM–12:45 PM	5–8	R04, Conv. Center	Here an Earth, There an Earth, Everywhere an Earth: Alien Planets—Real or Myth (p. 53)
3:00–4:00 PM	6–12	206, Conv. Center	Building the 21st-Century Science Classroom: iPads, Tablets, Apps, and More (p. 55)
3:00–4:00 PM	4–8	225, Conv. Center	Connecting NGSS Science and Inquiry with the <i>Common Core State Standards, ELA</i> (p. 56)
3:00–4:00 PM	6–8	226, Conv. Center	STEM Garden Challenge: How Does Your Garden Grow? (p. 56)
3:00–4:00 PM	4–12	227, Conv. Center	How to Get Students Thinking About STEM Careers Now! (p. 56)
3:00–4:00 PM	5–12	228, Conv. Center	EXTREME WEATHER (p. 57)
3:00–4:00 PM	6–12	R03, Conv. Center	Equity in STEM: The Case for the Integration of Character Education in a STEM Learning Environment (p. 57)
4:15–5:15 PM	5–8	220, Conv. Center	Snakes of the Southeast Go STEM (p. 58)
4:15–5:15 PM	6–8	225, Conv. Center	Using Minimal Resources to Achieve Maximum Results (p. 58)
4:15–5:15 PM	4–7	226, Conv. Center	STEM Inquiry and Problem-Based Learning (p. 58)
4:15–5:15 PM	2–12	228, Conv. Center	Prototyping Your Way to Success in the STEM Classroom (p. 59)
4:15–5:15 PM	4–8	230, Conv. Center	Implications of STEM Education on Minority Populations and Methods for Improvement (p. 59)
4:15–5:15 PM	3–8	R02, Conv. Center	The AIAA Educator Academy: Mars Rover Celebration Curriculum (p. 59)
4:15–5:15 PM	6–8	R03, Conv. Center	Engineering Buoys to Test Water Conditions in a Local Water Source (p. 59)
4:15–5:15 PM	5–8	R04, Conv. Center	STEM Journals: The Engineered Answer You've Been Looking for! (p. 60)
4:15–5:15 PM	6–8	R05, Conv. Center	Baby Steps: Introducing Engineering Design into the Science Classroom (p. 60)

### High School Strand

#### Thursday

10:30–11:30 AM	9–C	223, Conv. Center	After the Storm—Engaging in Argument (p. 27)
10:30–11:30 AM	6–12	224, Conv. Center	Teach in 3-D: Using 3-D Printers to Teach Engineering Practices in Grades 6–12 Science Classrooms (p. 27)
10:30–11:30 AM	6–C	229, Conv. Center	Strategies for STEM Success (p. 27)
10:30–11:30 AM	9–12	232, Conv. Center	Designing Project-based Units: Keys for Success (p. 28)
10:30–11:30 AM	9–10	R06, Conv. Center	Oranges to Oranges (p. 29)
10:30–11:30 AM	8–12	R07, Conv. Center	Hey, That's MY Data! (p. 29)

## Schedule at a Glance High School Strand

10:30–11:30 AM	7–12	R08, Conv. Center	Cars: An Easier Way to Drive Home Hard-to-Teach Physical Science (Chemistry) Concepts (p. 28)
11:45 AM–12:45 PM	9–12	223, Conv. Center	Modeling Science for the Next Generation (p. 30)
11:45 AM–12:45 PM	8–C	224, Conv. Center	Using Grand Challenges to Promote Interdisciplinary Learning (p. 30)
11:45 AM–12:45 PM	9–C	229, Conv. Center	IScS: An Innovative Integrated Science Program to Light Students' Fire for Science (p. 31)
11:45 AM–12:45 PM	9–C	R06, Conv. Center	AIAA Space Weather Balloon Curriculum Module (p. 32)
11:45 AM–12:45 PM	8–12	R07, Conv. Center	eLABorate with TEChnology (p. 31)
3:00–4:00 PM	9–12	210, Conv. Center	Making Waves: Building Simple Radio Systems (p. 34)
3:00–4:00 PM	6–C	224, Conv. Center	Interdisciplinary STEM Units—Integrating NGSS Practices and the CCSS (p. 35)
3:00–4:00 PM	6–C	230, Conv. Center	Energy 101: The Sterling High School Chevy Volt Project (p. 36)
3:00–4:00 PM	6–12	R07, Conv. Center	Analyzing and Interpreting Ground Water and Ice Sheet Data Using Visualizations and Scientific Data Sets (p. 37)
3:00–4:00 PM	9–12	R08, Conv. Center	Using Newer Google Apps to Enhance Science and Engineering Practices in High School (p. 36)
4:15–5:15 PM	7	215, Conv. Center	Making Infections Infectious (p. 40)
4:15–5:15 PM	9–C	223, Conv. Center	Broadening Participation of SBIR/STTR Research Experiences for Secondary Students (p. 38)
4:15–5:15 PM	9–12	R01, Conv. Center	Engineering Their World (p. 39)
4:15–5:15 PM	6–12	R07, Conv. Center	Analyzing and Interpreting Earthquake Data to Assess Earthquake Risk (p. 40)

### Friday

10:30–11:30 AM	6–C	210, Conv. Center	NASA Visualization Explorer Stories in the Classroom Using Mobile Devices and the Web (p. 48)
10:30–11:30 AM	7–12	224, Conv. Center	Engineering Your Instruction (p. 47)
10:30–11:30 AM	9–C	R01, Conv. Center	Cultivating the STEM Mind-set: Transforming Spoon-fed Learners into Free-range Problem Solvers (p. 48)
10:30–11:30 AM	9–C	R09, Conv. Center	Increasing Student Understanding of Science Practices Through Technology (p. 47)
11:45 AM–12:45 PM	11–C	210, Conv. Center	Chemistry and Computational Thinking: A Hands-On Approach (p. 52)
11:45 AM–12:45 PM	4–C	223, Conv. Center	Teaching STEM Subjects to Students with Special Needs (p. 51)
11:45 AM–12:45 PM	9–C	224, Conv. Center	Designing and Building a Student Colorimeter (p. 51)
11:45 AM–12:45 PM	6–C	229, Conv. Center	Applying Critical Media Literacy Skills in the Science Classroom and Beyond (p. 51)
11:45 AM–12:45 PM	7–12	231, Conv. Center	The STEM Puzzle: Helping Teachers Help Their Students Put It Together (p. 52)
11:45 AM–12:45 PM	8–12	R07, Conv. Center	NASA's Space Forensics: Integrating Storytelling into STEM Education (p. 53)
11:45 AM–12:45 PM	10–C	R08, Conv. Center	Digital Paradigm Shift in Advanced Placement Science (p. 52)
3:00–4:00 PM	9–12	229, Conv. Center	Minds-On Learning in a STEM Classroom (p. 56)
3:00–4:00 PM	9–12	R06, Conv. Center	Understanding the Role of Enzymes in the Production of Biofuels: A Project Based Learning Approach (p. 57)
3:00–4:00 PM	9–C	R07, Conv. Center	Catch Students' Attention with Mousetrap Vehicles! (p. 57)
3:00–4:00 PM	7–12	223, Conv. Center	Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun (p. 56)
4:15–5:15 PM	6–12	222, Conv. Center	Introducing Nanoscience to Science Classrooms (p. 59)
4:15–5:15 PM	9–12	229, Conv. Center	Using Global Climate Change as a Platform for Interpreting Graphical Data (p. 59)
4:15–5:15 PM	6–12	R06, Conv. Center	Building a \$10 Smartphone Microscope (p. 60)
4:15–5:15 PM	6–12	R07, Conv. Center	Smile! You're Using Classroom Cameras! (p. 60)
4:15–5:15 PM	7–12	R08, Conv. Center	Shoestring Aquaponics: One Method for Forming an Integrated Applied Science Program (p. 59)

# Schedule at a Glance Partnerships Strand

## Partnerships Strand

### Thursday

8:00–9:00 AM	G	R02–R05, Conv. Center	How Can STEM Partnerships Support Students and Teachers Doing Science and Engineering Projects? (p. 23)
9:15–10:15 AM	G	210, Conv. Center	Urban Advantage: Formal-Informal Science Education Partners Working Together in STEM Education (p. 23)
9:15–10:15 AM	G	215, Conv. Center	The Museum of Science and Industry’s C.A.S.E. Model (p. 23)
9:15–10:15 AM	G	216, Conv. Center	Science Museum as Catalyst for Bringing Design and Engineering Practices into the Classroom (p. 24)
9:15–10:15 AM	G	221, Conv. Center	Science Museum/School Partnerships: A Blueprint to Success (p. 24)
9:15–10:15 AM	G	232, Conv. Center	The OSLN-Akron Hub: Leveraging Successful STEM School Models to Impact All (p. 24)
10:30–11:30 AM	P–5/C	215, Conv. Center	STREAM Family Involvement Events (p. 28)
10:30–11:30 AM	3–8	218, Conv. Center	A Coach’s Perspective: Reflections on Supporting Elementary and Middle School Teachers to Integrate Science and Engineering Practices into Daily Instruction (p. 26)
11:45 AM–12:45 PM	6–C	215, Conv. Center	Interactive K–12 Pipeline to STEM College and Career Programs (p. 31)
3:00–4:00 PM	6–C	215, Conv. Center	Integrated STEM Teacher Education: A Successful Partnership and Innovative Model (p. 36)
3:00–4:00 PM	5–12	218, Conv. Center	STEM Global Learning Perspectives (p. 34)
3:00–4:00 PM	5–8/C	219, Conv. Center	STEM Professional Development Connections (p. 34)
3:00–4:00 PM	G	223, Conv. Center	Girls Reinventing Our World: Girl Scouts Changing the World through STEM (p. 35)
3:00–4:00 PM	5–12	232, Conv. Center	Real-World Externships (p. 36)
4:15–5:15 PM	6–C	217, Conv. Center	Real STEM: Scientific Research for Rural Georgia High School Students (p. 38)
4:15–5:15 PM	4–8/C	218, Conv. Center	Connecting Local Youth with University Students Through STEM (p. 38)

### Friday

8:00–9:00 AM	G	R02–R05, Conv. Center	How Can STEM Partnerships Support Students and Teachers Doing Science and Engineering Projects? (p. 43)
9:15–10:15 AM	G	210, Conv. Center	Urban Advantage: Formal-Informal Science Education Partners Working Together in STEM Education (p. 44)
9:15–10:15 AM	G	215, Conv. Center	The Museum of Science and Industry’s C.A.S.E. Model (p. 44)
9:15–10:15 AM	G	216, Conv. Center	Science Museum as Catalyst for Bringing Design and Engineering Practices into the Classroom (p. 44)
9:15–10:15 AM	G	221, Conv. Center	Science Museum/School Partnerships: A Blueprint to Success (p. 44)
9:15–10:15 AM	G	232, Conv. Center	The OSLN-Akron Hub: Leveraging Successful STEM School Models to Impact All (p. 44)
10:30–11:30 AM	C	215, Conv. Center	Analysis and Critique of the East Tennessee State University (ETSU) STEM Innovation Hub (p. 46)
10:30–11:30 AM	G	217, Conv. Center	Texas–STEM Coalition: Partnerships for Success (p. )
10:30–11:30 AM	P–12	218, Conv. Center	How Stamford Became STEMford for the Day! (p. )
10:30–11:30 AM	6–12	219, Conv. Center	Climate Change—Blending NGSS Science and Engineering Practices (p. 46)
11:45 AM–12:45 PM	6–9	215, Conv. Center	“Growing” Green Engineers: Using STEM to Design a Middle School Sustainability Unit (p. 52)
11:45 AM–12:45 PM	K–12	218, Conv. Center	Vertical Teaming for STEM (p. 50)
11:45 AM–12:45 PM	9	219, Conv. Center	LIGO/St.Tammany/Tangipahoa: A District and Research Facility Partnership (p. 50)
3:00–4:00 PM	G	215, Conv. Center	Using Collaboration to Increase STEM Engagement for Underrepresented Youth (p. 57)

## Schedule at a Glance Partnerships Strand

3:00–4:00 PM	G	217, Conv. Center	Plugging in the USB: A Partnership Model for STEM Systemic Change Among University, School, and Business (p. 55)
3:00–4:00 PM	2–7	218, Conv. Center	Analysis of Junior Engineering Achievements Performance for 10 Years (p. 55)
3:00–4:00 PM	7–C	219, Conv. Center	Seeing Earth Data (p. 55)
4:15–5:15 PM	5–9/C	217, Conv. Center	Partnering for Connected STEM Professional Development (p. 58)
4:15–5:15 PM	G	218, Conv. Center	Next Generation STEM: Forging Professional Development Partnerships Among Universities, County Offices of Education, and Informal Science Institutions (p. 58)
4:15–5:15 PM	6–12	219, Conv. Center	Connect-Collaborate-Relate-Create: Design Innovative Professional Learning Using the Rockwall STEM Experience Model (p. 58)

### Administrators Strand

#### Thursday

10:30–11:30 AM	G	R01, Conv. Center	Invited Administrators Panel: Success Stories from Administrators (p. 26)
11:45 AM–12:45 PM	9–12	R01, Conv. Center	How the STEM Center Works at Eastern Tech (p. 32)
3:00–4:00 PM	5–9	231, Conv. Center	Building a Culture of Collegiality and STEM Practice (p. 36)
4:15–5:15 PM	6–12	231, Conv. Center	Implement and Fund a Collaborative, Interdisciplinary STEM Program Within Master Schedule (p. 39)
4:15–5:15 PM	K–12	232, Conv. Center	Building Effective STEM Partnerships (p. 39)

#### Friday

10:30–11:30 AM	P–5	232, Conv. Center	Creating and Sustaining the Effective Integrated STEM Culture in K–5 (p. 48)
11:45 AM–12:45 PM	G	232, Conv. Center	STEM Program Start-Up Tools: Collaboration, Partnership, Science Instigator, and Strategic Administration (p. 52)
3:00–4:00 PM	9–12	232, Conv. Center	What Do the Standards of Mathematical Practice Look Like in the STEM Classroom? (p. 57)
4:15–5:15 PM	K–5	232, Conv. Center	Designing a New STEM Program: A First-Year Guide (p. 59)

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