The MITS Professional Development Seminar Series is designed for staff, volunteers and other professionals from science, environmental, natural history, technology, art, history and other cultural institutions and centers in New England. Each seminar is a full-day, split into two sessions. The mornings are spent exploring STEM content areas with scientists and policy makers. Afternoon sessions are skill-based, focusing on turning real-life science into exciting, inquiry-based, minds-on, hands-on lessons and activities for your programs with K-12 students and teachers and other youth programs.

The seminars are designed as professional development opportunities to provide content and teaching resources for your staff as well as networking opportunities for professionals in informal education settings. Teachers, science coordinators and other formal educators are also welcome to join us for these seminars. This year we are offering 4 STEM seminars. Join us on January 24th, February 14th and April 24th for seminars in the traditional morning/afternoon format, and on March 28th for a special full-day seminar. All 4 seminars promise to provide an exciting, hands-on professional development opportunity for you and your staff!

Cost: The registration fee for participants is $40 per session (includes lunch).
Discounted fees of $108 are offered for attending 3 sessions or $140 for attending all 4 sessions.
Certificates of participation are available for each seminar. PDPs are available for those participating in 2 or more seminar dates.

For more information contact: MITS at 617-328-1515 or mits@mits.org

**Registration is *required*. Please detach and and return form below with Check or Purchase Order to MITS, Inc., 1354 Hancock St., Ste. 302, Quincy, MA 02169 OR register online at www.mits.org.**

## Registration Form

Name _____

Organization _____ Position _____

Address _____

Phone (work) _____ Phone (cell) _____

Email _____ Alternate Email _____

Please check the seminars you will attend:

- ☐ Jan 24 $40
- ☐ Feb 14 $40
- ☐ March 28 $40
- ☐ April 24 $40
- ☐ All 4 Dates $140*
- ☐ 3 Dates (Specify) $108*

* *Discounted Rate*

*Registration fee includes lunch*

Total Amount Enclosed: _____

Museum Institute for Teaching Science
1354 Hancock Street, Suite 302
Quincy, MA 02169

**Join MITS for an exciting seminar series focusing on STEM topics and inquiry!**

# Museum Institute for Teaching Science

## 2018
## Professional Development Seminar Series

January 24, February 14, March 28 & April 24

9:30 a.m. - 3: 30 p.m.

Hands - on
Minds - on
Inquiry - based
Museum Institute for Teaching Science

Higgins University Center, Clark University
Worcester, MA

## Wednesday, January 24th

### Extreme Events and Climate Change: What We Know and Some Ideas About What To Do About It

*Ellen Marie Douglas, Associate Professor of Hydrology, School for the Environment, University of Massachusetts Boston*

Climate science tells us three truths about what we can expect from climate change. The first: small changes in an average value, such as average global temperatures, will have bigger effects on the extremes. We have seen this truth play out in the extreme weather events that have wrought havoc across New England and the nation over the last decade or more. Under climate change, records are getting broken in…well, record time! The second truth: our history of $CO_2$ emissions has embedded a certain amount of change into the climate system, to which we will need to adapt. And the third truth: if we don't account for our changing climate in planning and designing, our plans and designs will be wrong. In this seminar, Dr. Douglas will present observations of our changing climate, what changes may be in our future here in New England, and some plans for how to adapt to these changes.

### Using Real-World Data to Explore Key Climate Concepts

*Jeremy D. Shakun, Assistant Professor, Dept. of Earth & Environmental Science, Boston College*

How can you put scientific data to use in your school or public programs? In this seminar, work with a group to compare real-world results to your expectations based on a climate change hypothesis. Use a model to show how random year-to-year weather variations can change how a trend is perceived, and consider how climate change will evolve over time. Calculate how the likelihood of an extreme weather event changes with a warming climate. Come away with ideas for incorporating science and engineering practices like analyzing data and arguing from evidence into programs and exhibits at your institution.

## Wednesday, February 14th

### Developing a Taste for Molecular Biology

*Lindsay Mehrmanesh, Biology Teaching Lab Supervisor, Brandeis University*

DNA, RNA, *Central Dogma*, genes, polypeptides, ribosomes… are these topics outside your wheelhouse? Engage in a conversation about why humans and other organisms exhibit the traits we do, and how you can weave this important topic into your institution's programs. Learn about how DNA functions as the blueprint of all organisms, from plants and animals to fungi and bacteria, and how that blueprint gets *translated* into observable traits. Dr. Mehrmanesh will illustrate with models how a change in your DNA code can lead to a difference in your sense of taste, and lead you in an activity that might identify you as a "super-taster". Lindsay will also discuss how she developed this activity as part of the Discovery Museums' Communication Fellowship and share ways you can find and utilize resources from industry and academia in the development of your own programming.

### Sharing Science: Connecting Scientists and Engineers with the Public

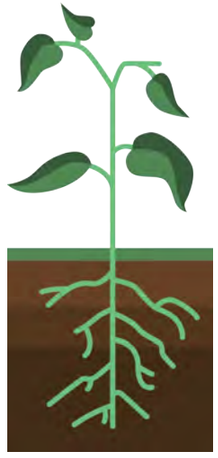
*Denise LeBlanc, Director of Learning Experiences, and Elizabeth Leahey, Assistant Director of Learning Experiences, The Discovery Museums, Acton*

Now more than ever, connecting the public with talented, dedicated, and diverse scientists and engineers is vital to promoting appreciation and understanding of these fields. In this seminar, you will engage in sample exercises from the The Discovery Museums' Science & Engineering Communication Fellowship program (part of the national *Portal to the Public* network) and learn about the hands-on activities developed by former fellows. Through their program, museum staff help scientists and engineers build effective communication strategies with the goal of sharing current research with visitors. Leave with ideas for fostering interactions between science/engineering professionals and your visitors/school programs to inspire curious, confident and enthusiastic science learners.

## Wednesday, March 28th

### Dig In: Strengthening Sustainability Learning Through Farm-to-School Connections

*Ryan Morra, Professional Learning Coordinator, Shelburne Farms & Vermont FEED*
*Simca Horwitz, Director, Massachusetts Farm to School Project*



Sustainability can be an abstract concept for students. To bring this concept down to earth, Farm-to-School promotes experiential and hands-on learning using the food system as a lens to explore local and global issues. In this full-day seminar, you will be introduced to interdisciplinary connections between our food system and climate change, watershed health, community land use, hunger and more. Participate in activities that will help you incorporate farm-to-school connections into your institution's programs. By analyzing data about global, industrial agriculture, you will see evidence of the consequences of large-scale production. Learn more about the science behind sustainable farming practices and new technologies that are helping small farms revitalize and provide local, high-quality food in an economically sustainable way.

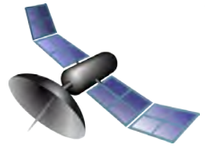
Join Vermont FEED (Food Education Every Day) and Massachusetts Farm to School to find out how to develop sustainability programs that offer a tangible, integrative, and relevant learning experience through deep exploration of the interconnected food system.

**For more detailed seminar descriptions and to register, visit www.mits.org.**

## Tuesday, April 24th

### The Technology, Data and People Behind Weather Forecasting

*Glenn Field, Warning Coordination Meteorologist, NOAA/National Weather Service - Boston, MA*



The weather forecasting process begins with a network of observations across a range of locations, from satellites 23,000 miles up in space to trained spotters on the ground. Peek behind the scenes to see how technologies like weather balloons, buoys, and Doppler radar are integrated into the forecasting process. Sophisticated numerical models use collected data to simulate and predict the location and intensity of weather systems. Learn how meteorologists at the National Weather Service interpret the models' predictions and apply their own local expertise to fine-tune the information. Explore the variety of New England weather phenomena, and look back at evidence of some of the big storms that have had an impact in our area.

### Engaging Students with Weather & Climate Through Media

*Jake Foster, Director, STEM Curriculum and Instruction, WGBH*

It never rains when you want it to! Unpredictable conditions and the scale of weather and climate phenomena can make it difficult to engage participants in direct observations of these phenomena. In this resource-filled seminar, you will experience strategies for using media to engage students in learning about weather and climate concepts. Different types of media, including imagery, videos to support observation or explanation, and data visualizations are effective ways to bring weather and climate phenomena to students. You will explore different media types and consider pedagogical strategies that encourage science practices through media use, and will walk away with an appreciation for how the Next Generation Science Standards sequence weather and climate expectations across grades K-12.