Museum Institute for Teaching Science

2016 Summer Professional Development Institute
Hybrid Institute For Grades 3-8 Educators

Using Science and Engineering Design Practices to Engage Your Students in Inquiry-Based Learning

Merrimack Region

Rivers, Renewables and Revolutions: How Science Understanding Informs Innovation in Engineering

On-Site July 18-22

On-Line June 18-August 5

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

Come get your feet wet with inquiry-based learning!

NATIONAL PARK SERVICE

TSONGAS INDUSTRIAL HISTORY CENTER

Mass Audubon
Protecting the Nature of Massachusetts

Mass Audubon's Drumlin Farm Wildlife Sanctuary
208 South Great Rd
Lincoln, MA 01773

Merrimack Region

Hybrid Institute for Grades 3-8 Educators

Rivers, Renewables and Revolutions: How Science Understanding Informs Innovation in Engineering

Explore the living laboratory of Lowell and the Merrimack River Watershed through inquiry-based, minds-on, hands-on experiences. Using the mill industry of Lowell as a model, discover how scientific understanding continues to inspire and inform innovations in engineering. The confluence of two rivers -- the Concord and Merrimack -- is significant as the birthplace of the Industrial Revolution in America. Learn how the flow of these two rivers was used to power mill production. Design and build a model mill-and-canal system to see how water's potential energy is transformed into the kinetic energy that powered Lowell's machines. Explore the technologies that harness the power of the water and design models that are used in today's renewable energy industry. Trace the evolution of scientific understanding about ecological systems to understand how the watershed is recovering from its more toxic, industrial past. Gather, analyze, and compare water quality data from ecologically diverse sites along the Merrimack River Watershed to learn about its current ecological health. Investigate the unfolding scientific understanding behind the Merrimack River's 1890 renaming as the "River of Death". Take a trip up Lowell's "Mt. Trashmore" to see a cross-section of efforts to remove and recycle waste, and design your own plan for land management that you can model with your students. Gain ideas and experiences that will help you build inquiry-based science investigations into your own curriculum.

Collaborators: Mass Audubon's Drumlin Farm Wildlife Sanctuary, Tsongas Industrial History Center, Lowell National Historical Park

Course Dates: On-Site July 18-22 (9:00 am - 3:30 pm); On-Line June 18-August 5; Half Day On-Site Introductory Session June 11; Half Day Fall Callback November 12

Registration Fee: $400/participant; $375/participant for team of 2 or more teachers from the same school district

PDPs and Graduate Credit: Cambridge College (4 credits, 90 PDPs; $200), Framingham State University (4 credits, 90 PDPs; $300); 50 PDPs available without graduate credit. PDPs and graduate credit will be awarded after participation in the Fall Callback.

Participate in content and skill development sessions taught by professional educators and scientists at each collaborating partner organization. Daily activities include indoor inquiry-based classroom experiences and outdoor field experiences. Take home investigations you can use in your classroom and a collection of teaching resources and field trip ideas!

- **Learn** how to present the Science and Engineering Practices to your students and how they relate to science inquiry.
- **Explore** STEM resources in your community.
- **Get ready** to meet the revised MA Science and Technology/Engineering Standards.
- **Become** part of a network of teachers from your region and across the state.

Visit www.mits.org for more info on this and MITS Professional Development Institutes in other regions and to register online.

For more information contact:

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