

2011-2012 Teacher Learning Modules

Let phosphate, a local resource with global impact, energize you and your classroom!



FIPR Institute

USF Polytechnic Florida Industrial and Phosphate Research Institute (FIPR Institute) invites teachers to participate in a series of Learning Modules on select Saturdays throughout the 2011-2012 school year.

Topics and Date: **Agriculture**, December 3, 2011
Florida's History and Geology, January 21, 2012
Hydrology and Reclamation, March 24, 2012
Energy and Transportation, April 28, 2012

(Note: all Learning Modules run from 8:30 am to 5:00 pm for the listed dates)

Where: FIPR Institute, 1855 West Main Street, Bartow, FL 33830.

Cost: \$10.00 per individual course (this is a non-refundable registration fee that covers non-sponsored lunch, trips, snacks, and supplies).
(Only \$35.00 if you register for all 4 modules by November 4, 2011)**

Participant Requirements:

- Maximum 35 participants.
- Must be a current classroom teacher, with a valid teaching certificate.
- Attendance and participation for the entire day.

What You Receive:

- A full day of immersion-learning experience, based on phosphate,
- Relevant classroom materials,
- In-service points, dependent upon your school district,
- Eligibility to apply for a \$1,000 mini-grant and additional funds for class field trips to prepare and pilot-test a phosphate teaching unit of publishable quality.

Workshop Contact:

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The USF Polytechnic Florida Industrial and Phosphate Research Institute (FIPR Institute) is proud to unveil its 2011-2012 Teacher Learning Modules in Bartow, Florida!

Each year, the FIPR Institute offers a Summer Workshop for teachers designed to expand their understanding of phosphate, a mineral with world-wide importance, and its connection to this area of central Florida. The Teacher Learning Modules are an extension to what is taught at the Summer Workshop, but teachers may sign up for Learning Modules without prior Workshop participation.

The FIPR Institute is Florida's internationally recognized center of research on the State's phosphate-related environmental, public health, and technology issues. Join us on an exciting journey to find real-world links to the information you teach. Learn how to use the FIPR Institute's scientific expertise, research and information to introduce students to the world they live in and understand phosphate's essential role in life.

Attending teachers develop lasting professional comradery forged through hands-on activities, field trips, shared discussions, and group interactions, that are perfect for fostering the S.T.E.M. subjects.

Although science is a prevailing theme in the Workshop, and attendees value the opportunity to hone their science skills, it is not the only academic discipline reinforced. The many facets of phosphate make it possible to relate all subjects and grade-levels in an academically rigorous manner.

Participating teachers take with them, into the school year, a renewed sense of enthusiasm and energy that transfers over to their students.

Remember, Summer Workshop participation is not a prerequisite. The FIPR Institute welcomes the opportunity to host you in this unique learning experience!

**Apply to attend the FIPR Institute's
Teacher Learning Modules today!**

Visit <http://www.fipr.poly.usf.edu> to apply!

Why learn about phosphate?

Phosphate is a nutrient necessary to all living things. It's in our DNA, integral to energy transfer, makes bones hard, and aids plant growth. Without phosphate, there would be no life!

The central Florida region, known as "Bone Valley," is rich in phosphate deposits formed in ancient seas. This important mineral resource is mined and used primarily for fertilizer production. For over a century, Florida has been the center of the global fertilizer market.

Phosphate mining, processing, and land reclamation offer teachers relevant applications of many subjects, including: paleontology, history, geology, chemistry, biology, economics, technology development, environmental science, and engineering.

Visit <http://www.fipr.poly.usf.edu> to apply!

2011-2012 Teacher Learning Modules Overview

(Please note that the specific details for each trip are subject to change, as the field trips are now being arranged. When the schedule is complete, a final detailed overview and schedule will be posted on the FIPR Institute web page. Details will be emailed to registered participants.)

Agriculture

December 3, 2011 (Registration ends November 4, 2011)

Teachers will explore how agriculture influenced our continent, phosphate's role in plant growth, and the history of phosphate mining and fertilizer production. Visit a granulation plant and a local farm to understand the impact phosphate has on fertilizer production and agricultural use. An overview of North American agriculture shows how farmers came to depend on fertilizer after the frontier "disappeared." Learn how fertilizer and soil types affect plant growth and test the soil sample you brought from home, to see if it contains macronutrients essential to plant growth. Teachers will test their own soil samples for the macronutrients Nitrogen (N), Phosphorus (P), and Potassium (K) that plants need, as well as observe other soil properties in the lab. Discuss how agriculture can be implemented at your school from what is learned.

Florida's History and Geology

January 21, 2012 (Registration ends December 2, 2011)

This day is devoted to Florida history, geology and paleontology; information teachers can use to encourage critical thinking in students. Local history plays a role in understanding the many changes of Florida over time. Teachers will learn how Florida's "footprint" and habitats changed over geologic time and the geological processes that were working to create those changes. We will investigate how Florida and its phosphate deposits were formed over millions of years ago during the Miocene Epoch and explore the history of the phosphate region from prehistoric times to the present Holocene Epoch. Having researched an animal from Florida's past or present; each teacher enacts a role in "Florida's Ancient Oceans," a hands-on activity created by the FIPR Institute. During a simulated fossil dig, scientific process skills will guide teachers to use higher order thinking.

Hydrology and Reclamation

March 24, 2012 (Registration ends January 6, 2012)

Reclamation is mandatory in Florida for all phosphate-mining operations. Experts will give insight into what regulations mining companies must follow, as well as what types of research is being done. Teachers will also learn how decades of research guides reclamation today. Go on a field trip to view reclamation sites at various stages of growth after mining. Teachers will also learn about native and restored habitats and water quality issues associated with nutrient problems. Explore marsh wetlands, oak hammocks, native and non-native habitats. Learn about the region's major waterways and hydrologic issues related to phosphate mining activity. Practice dip netting and water quality testing. Awareness of Florida's origins and native habitats provides a frame of reference for information teachers will gain about the reclamation of land after mining.

Energy and Transportation

April 28, 2012 (Registration ends February 10, 2012)

This module spends the day "on the road" looking at the trains and ships that move phosphate materials and products around the area, the nation and the world, as we consider the economic impact of the phosphate industry. We plan to visit CSX railroad facilities and the Port of Tampa, that is one of the largest ports in the country due to the shipment of phosphate. At the port, we will see storerooms packed with the final central Florida phosphate fertilizer products, Diammonium Phosphate (DAP) and Monammonium Phosphate (MAP). We will explore exercises to evaluate industrial, environmental and economic benefits and consequences.