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Reflections

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Publisher of ***Introductory Physical Science*** *(IPS)* and ***Force, Motion, and Energy*** *(FM&E)*
Thoughtful Curricula Developing Thinking Students

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NGSS Resources from NSTA

Since the release of the *Framework for K-12 Science Education* in 2011, the National Science Teachers Association (NSTA) has been helping teachers prepare for the *Next Generation Science Standards* by helping them better understand the foundation on which it is built—the *Framework*. The result is a robust collection of resources in the form of journal articles, web seminars, publications, and much more. Harold Pratt, *Introductory Physical Science* co-author and president of Science Curriculum Inc., who has been working closely with NSTA in the review and analysis of the *Framework* and *NGSS*, has compiled a list of resources currently available or at press. These resources can facilitate your introduction to the standards or help you as you work to incorporate the standards into your practice after the final version of *NGSS* is released. This release is currently scheduled for the week of April 8.

NSTA has already begun to develop additional resources focused on helping teachers learn more about the new standards, gain a deeper understanding of the content and architecture of the standards, and translate the standards into effective classroom practice. However, although the release of the final version of *NGSS* is imminent, it may be some time before the new standards are adopted and even longer before they are implemented. Even if you are in one of the 26 lead states that participated in the development of the standards, those states must still formally adopt them. Check with your school district or state education department to determine if and when adoption is being considered.

An essential starting place for learning more about the *Next Generation Science Standards* is NGSS@NSTA, located at www.nsta.org/ngss. A link to the soon-to-be-released standards can be found here, along with a host of resources ranging from web seminars to

See NGSS RESOURCES on page 2

Science Curriculum Inc. and *IPS* will be at the NSTA National Conference in San Antonio next week (April 11-13). If you are attending, be sure to come see us in the Exhibit Hall! (Booth #842)

NGSS RESOURCES (from page 1)

journal articles and from short courses to institutes. This resource page is updated frequently with new materials aimed at helping teachers realize the vision of *NGSS*. Following is just a sampling of what you will find.

Publications

The NSTA Reader's Guide to *The Next Generation Science Standards* (in press)

This guide by Harold Pratt, past president of NSTA and consultant to NSTA for the review of the *Framework* and *NGSS*, is designed as an introduction to the standards and how to begin using them by translating them into instructional practice.

The *Next Generation Science Standards* and the Life Sciences: From Standards to Classrooms (expected June/July 2013)

This guide by Rodger Bybee, an *NGSS* writer and co-lead for Life Sciences, will give science educators a path to think about the integration of *NGSS* into classroom practices. The chapters answer questions about translating standards into classroom practices and gives insights about reforming curriculum for schools, districts, and states.

Science for the Next Generation: Preparing for the New Standards (expected: May 2013)

This multi-contributor book of essays and mini-lessons developed in conjunction with the Science Teachers Association of New York State is geared for elementary teachers to help them prepare for the NGSS.

Supporting Next Generation Scientific and Engineering Practices in K-12 Classroom (expected: summer 2013)

This is a multi-contributor book on the scientific and engineering practices.

The NSTA Reader's Guide to A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas (e-book)

This handy *Reader's Guide* by Harold Pratt unpacks the three key dimensions of the Framework allowing teachers, administrators, curriculum developers, university professors, and others to more easily grasp how *NGSS* differs from previous *National Science Education Standards*. For each chapter of the *Framework*, the guide offers an overview with a brief synopsis of key ideas, an analysis of what is similar to and what is different from the *NSES*, and suggested actions to help readers understand and prepare for the *NGSS*.

NSTA Journal Series: Exploring the Science *Framework* and Preparing for *NGSS*

Learn from the experts, including many writers of *NGSS* and the *Framework*, in an impressive collection of journal articles that now exists on the *Framework* and its key dimensions.

Scientific and Engineering Practices

- "Scientific and Engineering Practices in K–12 Classrooms" by Rodger W. Bybee
- "Exploring the Science Framework: Engaging learners in scientific practices related to obtaining, evaluating, and communicating information" by Philip Bell, Leah Bricker, Carrie Tzou, Tiffany Lee, and Katie Van Horne
- "Engaging Students in the Scientific Practices of Explanation and Argumentation" by Brian J. Reiser, Leema K. Berland, and Lisa Kenyon
- "Engaging Students in Scientific Practices: What does constructing and revising models look like in the science classroom?" by Joseph Krajcik and Joi Merritt

See NGSS RESOURCES on page 3

NGSS RESOURCES (from page 2)

Disciplinary Core Ideas

- "The Next Generation Science Standards and the Life Sciences: The important features of life science standards for elementary, middle, and high school levels" by Rodger Bybee
- "The Next Generation Science Standards: A Focus on Physical Science" by Joe Krajcik
- "The Next Generation Science Standards and the Earth and Space Sciences" by Michael Wysession

Crosscutting Concepts

- "The Second Dimension—Crosscutting Concepts" by Richard A. Duschl

Engineering

- "Core Ideas of Engineering and Technology" by Cary Sneider

Connections to Common Core

- "Exploring the Science Framework: Making connections in math with the common core state standards" by Robert Mayes and Thomas R. Koballa, Jr.

NSTA Web Seminars that Focus on the *Framework*

Scientific and Engineering Practices: NSTA hosted a series of web seminars for science educators to better understand the practices described in the Framework. The web seminars focused on helping teachers understand the key elements of the practices, how the practices work together, and what the use of the practice looks like in the classroom. They all have been archived at www.nsta.org/ngss.

- "Obtaining, Evaluating and Communicating Information" by Philip Bell, Leah Bricker, & Katie Van Horne
- "Engaging in Argument from Evidence" by Joe Krajcik
- "Constructing Explanations and Designing Solutions" by Katherine McNeill & Leema Berland
- "Using Mathematics and Computational Thinking" by Robert Mayes & Bryan Shader
- "Analyzing and Interpreting Data" by Ann Rivet
- "Planning and Carrying Out Investigations" by Rick Duschl
- "Developing and Using Models" by Christina Schwarz & Cynthia Passmore
- "Asking Questions and Defining Problems" by Brian Reiser
- "Using the NGSS Practices in the Elementary Grades" by Heidi Schweingruber & Deborah Smith
- "Engineering Practices in the Next Generation Science Standards" by Mariel Milano
- "Connections Between Practices in NGSS, Common Core Math, and Common Core ELA" by Sarah Michaels

Crosscutting Concepts: This web seminar series explores the crosscutting concepts to provide K-12 teachers with strategies for implementing *NGSS* in the classroom.

- "Patterns" by Kristin Gunckel
- "Cause and Effect: Mechanism and Explanation" by Tina Grotzer
- "Scale, Proportion, and Quantity" by Amy Taylor and Kelly Riedinger

See NGSS RESOURCES on page 4

NGSS RESOURCES (from page 3)

Upcoming Web Seminars: The following web seminars are scheduled for the remainder of the school year.

- "Systems and System Models" (scheduled for April 16)
- "Energy and Matter—Flows, Cycles, and Conservation" (scheduled for April 30)
- "Structure and Function" (scheduled for May 14)
- "Stability and Change" (scheduled for May 28)

Harold Pratt was a staff member and writer for the National Science Education Standards (NSES) *and a former President of NSTA. He is president of Science Curriculum Inc., and he has consulted with NSTA during the review and feedback phase of the development of the* Next Generation Science Standards (NGSS).

Looking for a credited Professional Development opportunity? Want to expand your content knowledge and instructional skills?

Consider the *IPS* National Summer Workshops at Colorado School of Mines in Golden, Colorado. The following workshops are scheduled for this summer:

***Introductory Physical Science* Part 1 – Properties of Matter**	**July 14-19, 2013**
***Introductory Physical Science* Part 2 – Atoms and Molecules**	**July 21-26, 2013**
***Introductory Physical Science* Part 3 – Energy and Forces**	**July 21-26, 2013**

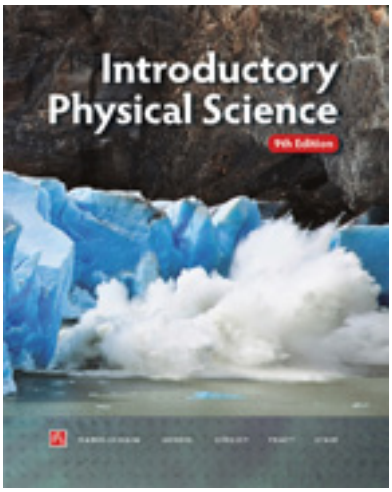
Each workshop earns 2 semester hours of graduate credit.

For more information and to apply, visit http://www.sci-ips.com/e_workshops.htm, or use the application provided at the end of this newsletter.

Did you know…?

- More than 15 million students have learned from *Introductory Physical Science* since its inception.
- All labs in *IPS* are thoroughly tested before they are included in the textbook. They work!
- *IPS* is used in schools nation-wide and internationally, including one of the largest school districts in the U.S. – Hillsborough County, Florida.
- Schools that have purchased textbooks from SCI in the last 3 years are eligible for a credit toward the tuition costs for the *IPS* National Workshops. This credit is equivalent to 5% of the textbook purchase amount over the 3-year period. For more information or to verify your school's unused credit balance, contact us at 888-501-0957.

IPS for the iPad!



The premier inquiry-based physical science textbook is now available for the iPad! Schools, teachers, students, and parents can now purchase the Ninth Edition of *Introductory Physical Science* as an ebook from the iTunes Bookstore.

To facilitate teaching in mixed classrooms—that is, classrooms in which some students have hard-bound "physical" textbooks while others have electronic books—the *IPS* ebook has been formatted to maintain the look of the printed book. All of the features found in the published hard-bound textbook are present in the ebook, and more!

Features present in both the printed and electronic versions of *IPS* include...

- An approach that models the scientific method rather than teaching it as an independent topic;
- Experiments that have been thoroughly tested and work;
- Lab investigations and activities that have been designed for both group and class-wide collaboration;
- Figures that further the storyline of the course rather than distracting from it;
- Comprehension Guide Questions™ (CGQs) to allow students to self-assess reading comprehension;
- Formative assessment questions (in lighter yellow background at the ends of most sections)
- More in-depth questions (in darker yellow background at the ends of most sections)
- Review, Application, and Extension questions at the end of each chapter;
- Short essay themes at the end of each chapter to promote writing skills.

In addition, with the *Introductory Physical Science* ebook, students can...

- Utilize embedded links to "jump" to a specific part of the text;
- Enlarge figures for more detailed study;
- Quickly find the definitions of "new" words;
- Highlight portions of the text (in a variety of colors!);
- Attach notes to portions of the text;
- Perform digital searches;
- Bookmark pages;
- Change the text font and font size.

Teachers – help relieve your students of the burden of heavy textbooks!

Schools – encourage students to take their textbooks home with them!

Get the new IPS ebook!

iPad, iTunes, and the Volume Purchase Program are trademarks of Apple, Inc.

Registration for the Science Curriculum Inc.

Introductory Physical Science (*IPS*) National Workshops

Colorado School of Mines

July, 2013

Course selection - please check the appropriate workshop(s):

___ ***IPS* Part 1 – Properties of Matter** **July 14–19, 2013**
___ ***IPS* Part 2 – Atoms and Molecules** **July 21–26, 2013**
___ ***IPS* Part 3 – Energy and Forces** **July 21–26, 2013**

Tuition cost: The tuition cost is $300 for each one-week workshop.

For maximum benefit, it is highly recommended that the* IPS Part 1 *workshop be taken prior to the* Part 2 *and/or* Part 3 *workshop.

NOTE: Since* IPS Parts 2 *and* 3 *meet concurrently, it is not possible to enroll in both.

NAME _____

GENDER *(for lodging purposes only-please circle one)* M F E-MAIL_____

HOME ADDRESS _____

HOME PHONE _____

SCHOOL NAME _____ PHONE _____

SCHOOL ADDRESS _____

SCHOOL DISTRICT NAME _____

In what area of science teaching do you teach the most classes? (please check one)

Physical Science ____ General Science ____ Earth Science ____ Other (please specify) _____

What was your major in college? _____ Graduate concentration, if any _____

Have you attended a previous *IPS* or *Force, Motion, & Energy* (*FM&E*) workshop or summer program? Yes No

Have you previously taught *IPS* or *FM&E*? Yes No

If yes, which program and for how many years? _____ At what grade level(s)? _____

Credit: Credit is awarded by Colorado School of Mines as graduate-level semester hours in continuing education. Each one-week workshop can be taken for 2 semester hours credit.

I do ___ do not ___ plan to take the workshop for credit.

NOTE: The tuition amount is the same with or without credit, and all registrants are expected to complete and submit all assignments.

LODGING AND MEALS *(Please complete this section <u>even if you will not be staying on campus</u>.)*

Lodging preference: ***(All accommodations are single bedroom in 2-4 bedroom suites.)****

___ I will be staying off-campus and will not need on-campus accommodations.

___ One week: $245.10 (6 nights: check-in Sunday; check out Saturday)

___ Two weeks: $531.05 (13 nights (includes weekend between workshops): check-in Sunday; check out Saturday)

Meals:* ***(It is recommended that participants have lunch together to facilitate the informal exchange of ideas.)***
<u>Commuters – please complete the lunch line even if arranging for your own lunch.</u>

Breakfast (Monday-Friday)	____One week ($40.32)	____Two weeks ($80.64)	____ I will arrange for my own breakfast.
Lunch (Monday-Friday)	____One week ($49.99)	____Two weeks ($99.98)	____ I will arrange for my own lunch.**
Dinner (Monday-**Thursday**)	____One week ($42.36)	____Two weeks ($84.72)	____ I will arrange for my own dinner.

* The prices quoted for lodging and meals include 7.5% tax.

** Please be aware that workshop participants who bring their own lunch are not admitted to the dining hall.

PARKING (Prices are set by Colorado School of Mines at $4 per day.)

Like many universities, Colorado School of Mines now charges for parking anywhere on campus, including streets. Whethe you will be commuting or staying on campus, if you bring a vehicle with you, you will need a parking permit. Please selec one of the following:

___ I will <u>not</u> have a vehicle on campus and will not need a parking permit.

___ I'll be commuting or staying on campus and will need a parking permit for <u>one</u> Monday–Friday workshop.

___ I'll be commuting and will need a parking permit for <u>two</u> Monday–Friday workshops.

___ I will be staying on campus for two weeks. I need a parking permit for two weeks, including the intervening week end.

DEPOSIT AND FINAL PAYMENT

A non-refundable deposit of $100 (payable to Science Curriculum Inc.) must accompany this application.

Please mail both to:

Coordinator of School Services
Science Curriculum Inc.
200 Union Blvd, Suite G-18
Lakewood, CO 80228

A confirmation of your registration and deposit will be sent to you, along with an invoice for the remaining balance.

Due to planning and commitment deadlines at Colorado School of Mines, *all outstanding balances will be due and must be paid in full* ***by June 5, 2013***.

Signature _____ **Date** _____

If you have any questions, please contact us at 303-988-5041 (toll-free 888-501-0957) or email workshops@sci-ips.com .