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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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Using the IPS Assessment Package

Testing with Multiple-Choice Questions

All too often, multiple-choice questions contain no explicit question, requiring students to simply "fill in the blank." Such "questions" provide no information about students' thinking. But when constructed properly, multiple-choice questions can do much more. They can test for understanding and the ability to apply knowledge to new situations, while also providing some insight into students' reasoning in arriving at specific answer choices. The *IPS* Chapter Tests live up to this standard.

The task of writing good test questions is not easy. Questions that probe students' thought processes, doing more than simply designating a correct or incorrect answer, rarely result from hurried test composition the night before a test is given. High quality, multiple-choice questions of the type described above—in order to maximize their formative, diagnostic capability—will include answer choices that correspond to common mistakes made by students. Consequently, students may at first be quick to jump at an answer that "looks right" and fits their incorrect expectation—without critically thinking through the problem. As a result, the scores obtained by students on *IPS* tests will often be lower than they are accustomed to with other multiple-choice tests.

IPS tests are not designed for grading on a fixed-percent basis, i.e., 90% is an A, 80% is a B, etc. The best way to evaluate the test results is to use the class average number of correct responses as the basis for an average grade, and utilize incorrect answers to address the indicated mistakes or misconceptions. In this way, the tests become a formative tool that is an integral part of the learning process, and students are aided in becoming more critical thinkers.

We recommend that the tests in the *IPS Assessment Package* be given as open-book and open-notebook tests. The positive effect of open-notebook testing on students' study habits has manifested itself in much better kept notebooks (often including tabs for quick reference!). Any students who think that the availability of notebooks and textbooks means that they will not have to study regularly will soon recognize

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their mistake.

Lab Tests

Many of the questions on the Chapter Tests relate to experiments; however, no pencil-and-paper test can take the place of an authentic, hands-on, performance test. In fact, you may find that the students who do well on the Lab Tests are not necessarily the same ones who do well on the Chapter Tests. Like the Chapter Tests, these Lab Tests assess student understanding and mastery of skills, as well as helping you judge the effectiveness of your teaching.

A statement of the problem to be solved in the laboratory accompanies the Teacher's Notes for each test. Master files of the student pages are also provided. These files can be printed and duplicated for student use. You may wish to distribute the Lab Tests a day in advance so that students will have sufficient time to plan their investigations.

When you distribute a Lab Test, tell your students what resources will be available to them. In addition to the standard *IPS* equipment and materials, students should be allowed to use their textbooks and notebooks. In this way, the investigations reflect the practices of the real world, where references are available and emphasis is shifted from memory work to practical and reasoning skills.

Inform your students that their work will be evaluated on the basis of the skills they demonstrate in the laboratory and the reasoning they apply to the investigation. Make it clear that the evidence they offer to support their conclusions is far more significant than any lucky guess.

The Ninth Edition of the *IPS Assessment Package*

Like previous editions of the *Assessment Package*, the new 9th Edition (scheduled for release in late May) is intended to help you assess the progress of your students in *IPS*. Much care has been taken to ensure that the tests are consistent with the objectives of the course. As in the past, the Chapter Tests consist of multiple-choice and open-response (essay) questions. Also included are Lab Tests, student handouts for the Lab Tests, suggestions for grading, and rationales for the answers to the multiple-choice questions.

Teachers who have used previous editions of the *AP* often requested a means to vary the tests so that the same test is not given to several consecutive classes. For that reason, the 9th Edition *AP* is being published on CD-ROM rather than in print. The *Assessment Package* CD contains multiple, equivalent forms of each chapter test; the questions are the same, but the answer choices have been scrambled, making "transference" of answers from one class to another more difficult.

For additional information about the 9th Edition *IPS Assessment Package*, visit **http://www.sci-ips.com/p_ips9_assess.htm**.

Beat the May 31 workshop registration deadline!

Reserve your spot by sending in your registration today!

(Course descriptions and a registration form appear later in this newsletter.)

THE FOLLOWING LIST CONTAINS JUST SOME OF THE SCHOOLS THAT HAVE RECENTLY ADOPTED THE 9TH EDITION OF INTRODUCTORY PHYSICAL SCIENCE (IPS)!

Dunn School – CA	**Neah-Kah-Nie Jr/Sr High School – OR**	**Brentwood School – CA**
Nashoba Brooks School – MA	**Hillsborough County Public Schools – FL**	**Isidore Newman School – LA**
Perkiomen School – PA	**Cheyenne Mountain High School – CO**	**Castilleja School – CA**
Portledge School – NY	**Faith Christian School –WI**	**Brandeis Hillel Day School –CA**
Green Vale School – NY	**Creighton Preparatory School –NE**	**Madras High School – OR**
Kearney High School – NE	**Aleutian Region School District – AK**	**Tatnall School –DE**

SHOULDN'T YOUR SCHOOL CONSIDER THE 9th EDITION of *IPS* ?

www.sci-ips.com/links.htm

IPS and *FM&E* National Workshops

***Introductory Physical Science (IPS)* Workshop Part A** — **July 10 through July 15, 2011**

Location: University of Denver (Denver, Colorado) — **Instructors: Peter Gendel, Graden Kirksey**

Tuition and Credit: $325 for 2 semester hours credit through Colorado School of Mines (Golden, Colorado)

Content: This workshop covers Chapters 1-6 of the 9th Edition of *Introductory Physical Science*. (Note: The topics covered in Chapters 1–6 are essentially the same in the 7th, 8th, and 9th editions.) Experience all of the student experiments and develop an understanding of basic concepts, laboratory skills, safety issues, and classroom management. Reading, reasoning, and communication will be addressed in the context of properties of matter, solutions, and mixtures. The use of technology in student experimentation and the evaluation of student work will be discussed.

***Force, Motion, and Energy* (*FM&E*) Workshop** — **July 10 through July 15, 2011**

Location: University of Denver (Denver, Colorado) — **Instructor: Bob Stair**

Tuition and Credit: $325 for 2 semester hours credit through Colorado School of Mines (Golden, Colorado)

Content: This workshop covers all seven chapters of the *Force, Motion, and Energy* curriculum, encompassing: 1) force and pressure in equilibrium, 2) motion of objects and waves, and 3) thermal, potential, and kinetic energy. You will perform 17 experiments. For each experiment and for reading sections, teaching strategies, classroom management, safety issues, and the questions students pose will be addressed. The use of technology in student experimentation and the evaluation of student work will be discussed.

***Introductory Physical Science (IPS)* Workshop Part B** — **July 17 through July 22, 2011**

Location: University of Denver (Denver, Colorado) — **Instructors: Peter Gendel, Graden Kirksey**

Tuition and Credit: $325 for 2 semester hours credit through Colorado School of Mines (Golden, Colorado)

Content: This workshop covers Chapters 7-11 of the 9th Edition of *Introductory Physical Science*. (Note: This includes all of the topics covered in Chapters 6–10 of the 7th and 8th editions of *IPS* plus a new chapter on molecular motion.) You will perform all student experiments, discuss classroom strategies, basic concepts, laboratory skills, and safety issues. Reading, reasoning, and student communication will be addressed, in addition to the use of technology in student experimentation and the evaluation of student work.

***Introductory Physical Science (IPS)* Workshop Part C** — **July 17 through July 22, 2011**

Location: University of Denver (Denver, Colorado) — **Instructor: Bob Stair**

Tuition and Credit: $325 for 2 semester hours credit through Colorado School of Mines (Golden, Colorado)

Content: This workshop covers an entire alternative branch included in the 9th Edition of *Introductory Physical Science*. Topics include energy, force, motion, and Newton's laws. This workshop will help you enhance your classroom practice as you experience student experiments and develop an understanding of basic concepts and laboratory skills. As in the other 9th Edition workshops, reading, reasoning, and student communication will be addressed in addition to the use of technology in student experimentation and the evaluation of student work.

Lodging on the University of Denver campus will be available for each of these courses for an additional fee (refer to the workshop registration form). Please give us a call at 888-501-0957 or email workshops@sci-ips.com if you have questions about any of these workshops. To register for one or more of these workshops, visit http://www.sci-ips.com/e_workshops.htm or fill out and mail in the registration form on the next page.

Registration for the

Science Curriculum Inc. 2011 National Workshops

at the University of Denver (DU), Denver, Colorado – July, 2010

COURSE SELECTION: *Please check the appropriate workshop(s).*

___ ***Introductory Physical Science* – Part A** **July 10–15, 2011**

___ ***Force, Motion, and Energy*** **July 10–15, 2011**

___ ***Introductory Physical Science* – Part B** **July 17–22, 2011**

___ ***Introductory Physical Science* – Part C** **July 17–22, 2011**

For maximum benefit, it is highly recommended that the* IPS *Part A workshop be taken prior to the Part B and/or Part C workshops.

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

GENERAL INFORMATION

NAME _____

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

SOCIAL SECURITY NUMBER_____ DATE OF BIRTH_____
(SS# and date of birth are required when taking course for credit)

HOME ADDRESS _____

HOME PHONE _____

SCHOOL NAME _____ PHONE _____

SCHOOL ADDRESS _____

SCHOOL DISTRICT NAME _____

BACKGROUND

What is your primary area of science teaching? (*Please check one.)*

____Physical Science ____Life Science ____Earth Science ____Integrated Science

____General Science Other *(please specify)* _____

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

Have you previously attended an *IPS* or *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)? _____

TUITION AND COLLEGE CREDIT

Tuition: For each one-week workshop, the tuition cost is $325.

Credit: Although the workshops will take place on the University of Denver campus, credit is awarded by Colorado School of Mines. Each one-week workshop can earn 2 semester hours graduate-level continuing education 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 even if you will not be staying on campus.)*

Lodging preference: *(All accommodations are single bedroom.)*

___ **One week ($320.43)** *(6 nights: check-in Sunday, check out Saturday; price includes 14.85% Denver lodging tax)*

___ **Two weeks ($694.27)** *(13 nights: check-in Sunday, check out Saturday; price includes 14.85% Denver lodging tax)*

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

Meals for those staying on campus: *(dinner Sunday through lunch on Friday; price includes 8.1% Denver food and beverage tax)*

___ **One week ($118.75)**

___ **Two weeks ($237.50)**

Commuter Lunches: *(Monday through Friday; it is recommended that participants have lunch together to facilitate an informal exchange of ideas; price includes 8.1% Denver food and beverage tax)*

___ **One week ($45.94)**

___ **Two weeks ($91.88)**

___ I will bring my own lunch.

PARKING PERMIT *(Recommended if driving to campus due to the limited street parking)*

___ **One week ($35.00)**

___ **Two weeks: ($70.00)**

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.

As confirmation of your workshop registration, you will be sent a statement showing your payment and any outstanding balance.

Due to deadlines stipulated by the University of Denver, *all outstanding balances will be due and must be paid in full* ***by June 3, 2011.***

Signature _____ Date _____

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