**Professional Development Workshops Summer 2011**

**Modeling Programs in Chemistry, Physics and Biology**

**open to all High School Science Teachers**

**1-week Introductory Programs in Chemistry and in Physics**

**2-week Intermediate Programs in Physics / Chemistry**

**1-week Developmental Programs in Biology**

**Sponsored by the Indiana DOE, I-STEM, NISMEC and**

**the Universities of Notre Dame, Marian and Southern Indiana**

***(Announcement & application form – revised 17 March, 2011)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Dates** | **Place** | **Type** | **Intructor(s)** | **Comments** |
| 6/27 - 7/1 | USI Evansville | Physics-I | Hugh Ross, Rob Spencer | Introductory |
| 7/11 - 7/22 | Guerin HS, Carmel | Physics-II | Hugh Ross, Rob Spencer | Intermediate (2 weeks) |
| 7/11 - 7/15 | Notre Dame | Chemistry-I | Ray Howanski | Introductory |
| 7/18 - 7/22 | USI Evansville | Chemistry-I | Ray Howanski | Introductory |
| 7/18 - 7/22 | Notre Dame | Biology-Ic | bootstrapping - 1 … | Developmental |
| 7/11 - 7/22 | Indy - University HS | Chemistry-II | tbd | Intermediate (2 weeks) |
| 6/20 - 6/24 | Indy - University HS | Chemistry-I | tbd | Introductory |
| 6/27 - 7/1 | Marian U | Biology-1a | bootstrapping - 1 … | Developmental |
| 7/11 - 7/15 | Marian U | Biology-1b | bootstrapping - 2 … | Developmental |

**To Register:** Choose the workshop(s) and week(s) you want to attend, complete and return the registration form (below). Because space is limited (24 per workshop), **priority will be given to teams of at least two teachers from the same school or district**. The “bootstrapping” biology workshops are only open to teachers who have completed at least one week of a physics or chemistry modeling workshop. This document, the application form, and more details of the topics to be covered in each workshop can be found at <http://www.nd.edu/~nismec/nismec11.htm>

**Some details:**

**The $1000 REGISTRATION FEE (for Indiana teachers) is being paid, courtesy of IN-DOE, I-STEM Participants will each receive a stipend of $500 per week;** you will need to make your own travel and accommodation arrangements. We are hopeful (and expect) that some subsidies will be available to partially reimburse these expenses - some on-site accommodation can be arranged at the universities of Notre Dame and Southern Indiana.

\*\* We have funding for **all the listed workshops** – they will take place if the teacher enrollment is above the minimum number (12). **Maximum enrollment for each workshop is 24.**

**Registration deadline: 30 May 2011** - application form attached - 2 graduate credits for each course-week – paid by participant - 1 extra credit for extra work after the workshop.

Each day’s workshop will **begin at 8:00 or 8:30 am and end at 4:00 pm**; light refreshments and lunch (at the ND site) will be provided.

Participants receive **35 hours per week of instruction**. Participants are exposed to Modeling as a systematic approach to the design of curriculum and instruction. The workshops incorporate up-to-date results of science education research, best practices in high school science teaching, use of technology, and experience in collaborative learning. (see last page for brief synopses of the different workshops)

Since “teachers teach as they have been taught,” **the workshops include extensive practice in implementing the curriculum** as intended for high school classes. Participants rotate through roles of student and instructor as they practice techniques of guided inquiry and cooperative learning. Plans and techniques for raising the level of discourse in class classroom discussions and student presentations are emphasized. The workshops immerse teachers in the physics or chemistry content of much of a one year course. All units are designed to promote understanding and improve student retention as demonstrated by research on the Modeling methodology.

1. For More information about Modeling in High School Science -see http://modeling.asu.edu

**Preliminary Application Form** **for the**

**Introductory, Advanced and Developmental INDIANA Modeling Science Workshops - Summer 2011** -

Return - **by email** to [hgberry@nd.edu](mailto:hgberry@nd.edu) or  **Fax to** 574-631-5952 (Attn. Berry)

or by **regular mail** to:

Gordon Berry, Physics Department, NSH225, University of Notre Dame, Notre Dame IN 46556

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Check the appropriate box(es) in the table below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Workshop** | **X** | **Workshop** | **X** | **Workshop** | **X** |
| 6/27-Phys-I-USI |  | 7/11-Phys-II-Guerin |  | 7/11-Chem-I-ND |  |
| 7/18-Chem-I-USI |  | 7/18-Bio-D-ND |  | 7/11-Chem-II-Univ.HS |  |
| 6/20-Chem-I-Univ.HS |  | 6/27-Bio-D-Marian |  | 7/11-Bio-D-Marian |  |

**Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **School** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Teaching area and grade(s)** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Contact:**  **email:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **phone** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**address:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Personal Information**

1. Years of chemistry/physics/biology teaching experience? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Do you or any other teachers (how many?) in your school use “modeling” or similar

procedures?

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3 What is your experience with guided inquiry instructional methods?

(Do you use guided inquiry methods now?)

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4. How often do your students do hands-on labs in their classrooms?

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5. Other comments/ info you have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Brief descriptions of the workshops**

**Physics -1** (at USI, Evansville, 1 week; schedule: 8 am- 4 pm) Introduction to modeling in mechanics.

**Physics – 2** (at Guerin School, Noblesville, 2 weeks; schedule: 9 am- 4 pm) Modeling in force, motion and introductory electricity.

**Chemistry – 1** (at ND, USI and University HS, 1 week; schedule: 8 am- 4 pm) Introduction to modeling in chemistry utilizing the particle model and its extensions.

**Chemistry – 2** (at University HS; 2 weeks; schedule: 9 am- 4 pm) Topics (to be decided) in chemistry, following on from Chemistry-1.

**Biology 1a and 1b** (at Marian University, 1 week; schedule: 8 am- 4 pm) We will focus on the specific needs for a modeling program for first year high school biology which fits the new Indiana biology standards. Participants will develop biology modules to be tested in the coming school year. Where possible, we will use as a basis the existing biology experimental program in place at Marian University. This is the first part of a several-year initiative to produce a national biology modeling curriculum.

**Biology 1c** (at Notre Dame,1 week; schedule: 8 am- 4 pm). We will focus on the specific needs for a modeling program for first year high school biology which fits the new Indiana biology standards. Participants will develop biology modeling modules to be tested in the coming school year. In addition, we will follow the same process to develop modeling modules for high school classes in the earth sciences, in ecology, and in astronomy. The experimental modules will be developed from the participants’ experiences in their own high school teaching. This is the first part of a several-year initiative to produce national modeling curricula in all these science areas.