

# CWSEI – PHYS & ASTRO

## Newsletter

Aug./Sept. 2011

Our department has always been committed to high standards in education. Recently, with support and leadership from the CWSEI, we have made increasing progress in successfully implementing research-based educational methods in our classrooms. An increasing number of our faculty are showing keen interest in these developments. In response, we will distribute this newsletter to keep you up-to-date with the latest CWSEI efforts.

In this issue, we invite you to participate in upcoming teaching workshops and the weekly drop-in hours, both led by our PHAS Teaching and Learning Fellows, and we will give a preview of new and on-going CWSEI activities in our department.

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**Georg Rieger (CWSEI Director for Physics and Astronomy)**

First, I want to thank Mona Berciu for helping me getting started in my new role as CWSEI director for Physics and Astronomy. Mona served as CWSEI director in our department for the last two years and did a fabulous job. Everyone tells me (and I agree) that I have big shoes to fill.

In this newsletter I want to give you an overview of the current and upcoming activities of the CWSEI in our department. Most of our efforts are dedicated to the transformations of specific courses but we will also hold workshops and weekly drop-in hours that are open to everyone. The idea is that we want to share the significant hands-on knowledge of our Science Teaching and Learning Fellows (STLFs) with more people in our department.

### **Weekly Drop-In Office Hours:**

In July, our PHAS CWSEI team has started to offer drop-in hours for teaching and learning support. These hours are open to everyone interested in science education. You can bring your questions,

concerns, and ideas about teaching and learning and discuss these with our CWSEI fellows. You can get advice and support on instructional methods, assessment, technology, resources and more.

*When and Where?*

*Every Thursday from 1-3 pm in Hennings 334.*

### **Workshops and Talks:**

Are you thinking about introducing (more) interactive learning activities into your classes? The workshops given by our STLFs might help you getting started or refine your existing activities.

The first workshop will focus on effective peer instruction using clickers in small and large classes. Peter Newbury and Cynthia Heiner will introduce you to the best practices using clickers as established by Science Education Research. Many of these practices have successfully been implemented in our courses. There will be lots of hands-on activities so bring your clicker question ideas.

*When and Where?*

*August 30th at 9:30 am in Henn 318*

We plan on holding more workshops on other interactive teaching methods such as worksheet-based activities, invention activities, and interactive lecture demonstrations. These methods offer an alternative to clickers, in particular in smaller classes but also work well in large classes.

*TBA*

Jim Carolan will give a talk on the use of surveys in our department. In particular, he will discuss what can be learned from surveys, which questions can be answered, and why the surveys are important for the department. This talk will be of particular interest to everyone involved in curriculum development.

*TBA This talk will be synchronized with a department meeting in October.*

### **Course Transformations:**

Six CWSEI STLFs (Science Teaching & Learning Fellows) are currently working in our department: Jim Carolan, James Day, Louis Deslauriers, Cynthia Heiner, Peter Newbury, and Ido Roll. Their main role is to provide support in course transformations, in particular in adopting interactive, learning-centered teaching methods in PHAS

courses. The course transformations listed below will take up most of the time of our STLFs (so that we cannot commit to more course transformations at this time) but we can provide help with specific activities such as designing good clicker questions or develop good in-class activities. So I want to encourage everyone to take advantage of the drop-in office hours and workshops mentioned above.

Below you will find an overview of the current and upcoming involvement in our PHAS courses. If you are interested in a particular transformation, don't hesitate to talk to the instructor(s) or the Teaching and Learning Fellows involved.

Phys 100 Labs (Jim Carolan, Ido Roll):

Complete transformation of the labs focusing on analyzing and presenting experimental data and experimental uncertainties. Labs are built around sense-making activities (student discussions, invention activities.) (homework). End-of-year project challenges students to perform an experiment at home using household items.

*Instructors: Georg Rieger, Marcello Pavan, Stefan Reinsberg*

Phys 101 (Cynthia Heiner):

Implementation of pre-reading assignments and worksheet-based activities in lectures. Development of a course-specific diagnostic tool.

*Instructors: Javed Iqbal, Cynthia Heiner, Fran Bates, Alex MacKay*

Phys 102 (Louis Deslauriers)

Implementation of pre-reading assignments and worksheet-based activities in lectures.

*Instructors: Vesna Sossi, Fran Bates, Joerg Rottler*

Phys 107 (Jim Carolan)

Continued development and implementation of in-class activities based on worksheets and clickers.

*Instructor: Ian Affleck*

Phys 107/109 Labs (James Day, Ido Roll)

Refinement of invention activities.

*Instructor: Doug Bonn*

Phys 153 (Louis Deslauriers, Cynthia Heiner)

Refinement of existing in-class activities and continued development

of new clicker-based activities. (See also previous newsletter.)

*Instructors: Don Witt, Sarah Burke, Mike Hasinoff, Andrzej Kotlicki*

Phys 153 Labs (James Day)

Reformation of labs in term 2.

*Instructor: Jeff Young*

Phys 315 (James Day)

Development of learning goals, alignment of learning goals with assessments, implementation of in-class group activities, development and refinement of clicker questions.

*Instructor: Vladimir Hinkov*

Phys 401 (Peter Newbury)

Development of clicker-based in-class activities (term 2).

*Instructor: Doug Bryman*

Surveys (Jim Carolan, Louis Deslauriers)

Analysis of large survey database with the focus on curriculum needs. Administration of new surveys.

Instructors involved in previous CWSEI course transformations:

Mona Berciu, Andrea Damascelli, Louis Deslauriers, Brett Gladman, Joshua Folk, Kirk Madison, David Jones, Andrzej Kotlicki, Harvey Richer, Georg Rieger, Ingrid Stairs, Mark van Raamsdonk, Carl Wieman, Jeff Young, Fei Zhou

If you have requests, ideas or suggestions for future workshops or seminars on teaching and learning, please let us know.

PHYS-ASTRO Science Education Research Team