

# Free Commercial Workshops

## CW01: Create Your New Year's Teaching Resolution: Engaging and Motivating Students in Introductory Physics

**Location:** Marina 6  
**Date:** Sunday, January 4  
**Time:** 11 a.m.–12 p.m.  
**Sponsor:** Cengage Learning

*Leader: Deborah Katz*

Join Debora Katz, Physics Professor at the United States Naval Academy, for this interactive session on implementing new and creative teaching techniques to motivate and engage students to succeed in Introductory Physics. We will identify student challenges, explore pedagogical possibilities to address those challenges, and find practical ways to implement new teaching techniques. The goal of the session is for you to walk away with a New Year's teaching resolution to implement in your classroom this year. Dr. Debora Katz is the author of a groundbreaking calculus-based physics program, *Physics for Scientists and Engineers: Foundations and Connections*, published by Cengage Learning. The author's one-of-a-kind case study approach enables students to connect mathematical formalism and physics concepts in a modern, interactive way. By leveraging physics education research (PER) best practices and her extensive classroom experience, Dr. Katz addresses the areas students struggle with the most: linking physics to the real world, overcoming common preconceptions, and connecting mathematical formalism to physics concepts. How Dr. Katz deals with these challenges—with case studies, student dialogues, and detailed two-column examples—distinguishes this text from any other on the market and will assist you in taking your students “beyond the quantitative.”

## CW02: Enrich Your Physics Course with WebAssign Additional Resources

**Location:** Spinnaker 1-2  
**Date:** Sunday, January 4  
**Time:** 12–1 p.m.  
**Sponsor:** WebAssign

*Leader: Matt Kohlmyer*

Since 1997, WebAssign has been the online homework and assessment system of choice for introductory physics lecture courses. Many veteran instructors already know that WebAssign supports over 150 introductory physics textbooks with precoded, assignable questions and advanced learning tools. WebAssign offers even more great resources for physics instruction, many of which can be adopted to supplement publisher offerings for no additional charge. In this presentation, we will focus on the wide array of WebAssign resources you can use to enrich your physics course. These include original question collections with feedback, solutions, and tutorials paired to some of the most popular textbooks; direct measurement videos that help students connect physics to real-world scenarios; conceptual question collections authored by experienced educators and designed around physics education research principles; and lab options that give you a complete low-cost, high-quality course solution. We'll show you how to add any or all of these resources to your WebAssign course. This workshop is intended for current WebAssign users, but newcomers are welcome to join.

## CW03: Expert TA: Closing the Gap between Homework and Test Scores

**Location:** Marina 6  
**Date:** Monday, January 5  
**Time:** 12:30–1:30 p.m.  
**Sponsor:** Expert TA

*Leader: Jeremy Morton*

The delta between students' homework grades and test scores is a concern we share with you. In order to study this, Expert TA entered into the arena of “Big Data” with our new Analytics tool. We used this to do an intense analysis of data from 125 classes from the 2013–2014 AY. Individual course reports are provided to instructors and we internally facilitated a cross-ref-

erence of all reports. We identify that major factors causing these gaps are: access to immediate and meaningful feedback, practice on symbolic questions, and a minimized ability to find problem solutions online. Knowing this, we have worked to develop the largest available library of “symbolic” questions and we use Analytics to data mine every incorrect answer submitted, in order to continually improve our feedback for these questions. We have also put in place very effective strategies to guard our problem solutions. The ultimate goal is to keep students focused on the physics; and then as they are working problems to provide them with meaningful, Socratic feedback that helps resolve misconceptions. Please join us and learn how other instructors are using this resource to reduce cost to students, increase academic integrity, and improve overall outcomes.

## CW04: CourseWeaver: Easy Authoring of Computer-Graded Homework

**Location:** Nautilus Hall I  
**Date:** Monday, January 5  
**Time:** 12:30–2:30 p.m.  
**Sponsor:** CourseWeaver

*Leaders: Gerd Kortemeyer, Wolfgang Bauer*

If you want to assign computer-graded homework in your teaching, here is your chance to learn how to do it. This session will guide you to create your own homework problems and will also show you how to use problems and problem sets created by others. Working with easy-to-understand examples and templates, you will be able to accomplish this even if you have only minimal or no programming experience.

## CW05: The New Fourth Edition of Matter & Interactions

**Location:** Executive 4  
**Date:** Sunday, January 4  
**Time:** 12–1 p.m.  
**Sponsor:** Wiley & Sons

*Leaders: Ruth Chabay and Bruce Sherwood*

*Matter & Interactions* is a calculus-based introductory physics textbook. It features a contemporary perspective, with emphasis on a small set of fundamental principles instead of a large number of special-case formulas, on the atomic nature of matter and macro-micro connections, with a strong emphasis on constructing models of real-world phenomena. It includes an accessible, serious introduction to computational modeling. It has proven to work well with students with average preparation as well as with honors and majors students.

The new fourth edition includes major improvements based on further experience with the curriculum, including significantly more explicit instruction on computational modeling. This workshop will provide participants the opportunity to learn more about this curriculum in general and about the new aspects of the fourth edition.

## CW06: The Amazing World of Ionizing Particles – Experiments with MX-10 Particle Camera

**Location:** Marina 6  
**Date:** Sunday, January 4  
**Time:** 1–2 p.m.  
**Sponsor:** Jablotron

*Organizer: Peter Žilavý (Peter Žilavý)*

If you wonder how to easily show your students the hidden but exciting world of energetic particles coming from natural and artificial sources, we might have a solution. With the MX-10 Particle Camera you can demonstrate phenomena in a way that is impossible with traditional school detectors and devices (such as GM tubes or cloud chambers). The MX-10 is a unique educational device capable of detecting and displaying ionizing radiation, visualizing and analysing particle tracks real-time. Powered by the Timepix chip created in CERN within the Medipix collaboration and using the

Pixelman control software (by the Institute of Experimental and Applied Physics of the Czech Technical University in Prague), the MX-10 is a useful tool for bringing live particle physics right into your school or university lab.

At this workshop you will have the opportunity to try out the device and carry out several experiments that illustrate selected properties of ionizing radiation.

## **CW07: Pearson – Conceptual Workshop**

**Location:** Executive 4

**Date:** Monday, January 4

**Time:** 12:30–1:30 p.m.

**Sponsor:** Wiley & Sons

*Organizer: Paul Hewitt*

Paul Hewitt, author and educator, will discuss the benefits of a conceptual approach in introducing physics to a diverse audience of non-scientists. He will also present new digital media that help students get the most learning from the conceptual approach. His new screen-cast mini-lectures will be demonstrated.